Chapter 15

PRIORITY CONSERVATION ACTIONS

Effective and accountable protection and restoration of wild steelhead, salmon, and trout stocks will require identification and implementation of strategic and tactical action priorities at local, watershed, and regional scales. NMFS has identified the need to delineate priorities for action is an essential element of a conservation plan (Chapter 4). Chapter 5 outlined available information on stock and habitat status, Chapter 12 outlined an analytical approach to develop priority actions and included initial action criteria based on stock status information. This resulted in stocks and watersheds being grouped into priority "tiers" for initial response and further consideration.

Tier 1 is the first level for priority actions and includes the healthiest (Kalama River) and the most critical (Wind River) stocks. The second group Tier 2, includes watersheds containing the remaining summer steelhead stocks (EF Lewis and Washougal rivers). Summer steelhead are of key concern due to their limited distribution, small population sizes, and vulnerability. Tier 3 includes stocks/watershed with multispecies benefits (e.g., chum, sea-run cutthroat, chinook, coho) and the remaining populations that are the most and least healthy. These watersheds include the Grays River and Hamilton Creek (chum priority), Coweeman River, Green River, and South Fork Toutle River. Tier 4 watersheds are represented by smaller populations or those strongly influenced by the hydro/FERC process and include Salmon Creek, Abernathy Creek, Skamokawa Creek, Cowlitz River, North Fork Lewis River, and North Fork Toutle River. Tier 5 is represented by the remaining stocks outside the Lower Columbia steelhead ESU including the Elochoman River, Mill Creek, and Germany Creek.

This chapter draws upon the information in Chapters 4 (Essential Elements of a Conservation Plan), 5 (Stock Status), 12 (Framework for Prioritization), and 14 (Objectives and Conservation Measures) to develop watershed-oriented overviews of key conservation strategies and actions organized by Tier, based on analyses and input received to date. Fish management and habitat subsections are included in this chapter; tributary dam/hydropower actions are not at this time. These descriptions are not intended to reflect fully developed and finalized watershed implementation plans. These descriptions should help clarify the current direction of the LCSCI.

Fish Management

The range of potential alternative fisheries management actions is large and may be viewed at various scales (e.g., within or between basins/watersheds). In some cases a range of alternatives as candidates for action are included due to their potential conservation benefits. Selection and prioritization among alternatives should be based on the extent to which the alternative would benefit wild steelhead and other salmonid resources, while balancing provision of other values (e.g., fishing opportunity, economics).

Hatchery programs are a priority risk issue within the LCSCI area, both for the state of Washington, and for NMFS under the ESA. Most of Washington's hatchery steelhead

programs are under the direct influence of WDFW, making modification of existing programs relatively straightforward. Measures pertaining to fishery management are also important, especially when they are linked to potentially increased harvest of hatchery steelhead.

Tier 1

WIND RIVER – Summer-run Wind River steelhead were grouped in Tier 1 due to their proposed critical status, whereas their depressed winter-run counterparts were grouped in Tier 3.

Summer steelhead predominate in the Wind River. Recent escapements of summer steelhead from multiple areas within the watershed have been between 100 and 300 fish, well below the current combined escapement goal of 1,500. Escapement has remained at this level since the mid 1980s. Wild summer steelhead in the Wind River were categorized as depressed in WDF et al. (1993). However, addition of recent data indicates their status has become critical (Appendix 2). To date, attempts to recover the stock through current hatchery management and sport fishing regulations have not been encouraging. Hatchery plants have remained below 40,000 for the last decade. A priority conservation strategy would involve exclusion of the current hatchery steelhead stock (Skamania) from wild steelhead spawning areas upstream from the Shipherd Falls fish ladder. Also, because of the poor status of this stock, coupled with the lack of response of the wild Wind River steelhead to restrictive harvest regulations, stocking rates of Skamania steelhead would be eliminated as an interim measure. Future use of hatchery steelhead consistent with the WSP would be considered after wild steelhead rebuild.

Trout Creek was the major spawning tributary of the Wind River. This creek was designated by WDFW and USFS for wild steelhead management in 1990. Operation of a trap has allowed exclusion of hatchery steelhead from wild steelhead spawning areas since that time. Currently, hatchery steelhead trapped at that location are donated to food banks or used for instream nutrient enhancement. In 1995, the trap appeared to inhibit wild steelhead passage and was therefore removed. In October 1996, the existing trap was redesigned and successfully operated. Hatchery steelhead will continue to be precluded from access to Trout Creek.

The chronically low wild steelhead escapements into the Wind River have lead to formation the Wind River Restoration Team. That inter-agency planning team consists of biologists from the WDFW, U.S. Fish and Wildlife Service, USFS, Yakama Indian Nation, the U.S. Geological Survey, and others. The team is currently working on an effort to rebuild fish populations and fisheries in the watershed. The restoration team is exploring the advantages and disadvantages of a change in the hatchery steelhead strategy (toward supplementation) and related objectives for the Wind River. Because of the chronically low wild summer steelhead escapement and the vulnerability of these fish to interbreeding with current or future hatchery steelhead, the supplementation option must be examined cautiously, but promptly. Consideration of development of a program to test the efficacy of supplementation as a rebuilding strategy (see also Appendix 6) should be pursued.

Wild steelhead habitat in the Wind River watershed, including Trout Creek, would be

expected to benefit from the ongoing Forest Management Planning process in the Gifford Pinchot National Forest. The National Marine Fisheries Service has found that President Clinton's Forest Plan will include habitat protection and restoration strategies adequate to protect and recover wild steelhead on USFS lands.

KALAMA RIVER – Kalama River steelhead are grouped in two different tiers based on their stock status. The winter-run stock, having healthy status, was grouped in Tier 1; however, the summer-run stock was grouped in Tier 2.

As stated in WDF et al. (1993) and Appendix 2, long term trends for wild steelhead indicate the Kalama River supports a healthy wild winter steelhead population and a depressed wild summer steelhead population. From 1990 to 1996, escapements have averaged about 1,340 wild winter steelhead spawners and about 1,100 wild summer-run spawners. Current escapement goals for wild winter and summer steelhead runs are 1,000 fish each. Recent genetic analyses (Phelps et al. 1997) indicate that a moderate extent of introgression has occurred from hatchery to wild steelhead. Steelhead angling in the Kalama River is very popular and an intensive harvest fishery for hatchery summer and winter steelhead has been maintained for many years. The Kalama River was one of the first streams in southwest Washington to have a sizable section of river regulated exclusively for fly fishing only, primarily because of its attraction for angling on wild summer steelhead. A long section of the river upstream from the area restricted to fly fishing has been completely closed to fishing for many years. This closed section of the river does not provide abundant spawning habitat or tributaries for spawning, but instead provides high quality habitat for pre-spawners to hold during warmer summer water conditions. Thus, various aspects of steelhead management in the upper Kalama River already afford a relatively high level of protection for wild steelhead. Other conservation measures in the upper reaches could be implemented to increase the level of protection that would be particularly useful for the protection of wild summer steelhead in the LCSCI area.

Recent releases of hatchery summer and winter steelhead have averaged 95,000 and 90,000 smolts, respectively. Hatchery summer smolts are from the Skamania stock whereas hatchery winter smolts are from Beaver Creek Hatchery. The percentages of hatchery steelhead currently spawning in areas having wild steelhead are high for both winter and summer forms (unadjusted, 30 - 80%; adjusted , 5 - 30%; Appendix 2), and these are key conservation concerns. In addition, it is estimated that 80 to 90% of the wild steelhead production area exists above the Kalama Falls Hatchery (KFH) at River Mile 10. The existence of a fish ladder and trap at this facility enables some important and rare opportunities for protection and restoration of wild summer and winter steelhead in upstream natural production areas. A critical element involves management of hatchery steelhead migrating into the upper river for spawning. To control hatchery steelhead a variety of short- and longer term (Phase 1 and Phase 2) actions would be pursued. These include:

(1) Releases of hatchery steelhead smolts would be reprogrammed to lower river areas, perhaps utilizing the Fallert Creek Hatchery for acclimatization and preferably long-term rearing. Currently, 60% of the steelhead smolts released into the river are planted

into a tributary (Gobar Creek) at Gobar Rearing Pond, which is about 7 miles above KFH. Gobar Creek provides one of the most important spawning tributaries for wild steelhead in the Kalama River watershed. Acclimation and rearing at KFH will be considered if the lower site is deemed not workable. Volitional release at Gobar Pond may be used as an interim measure for winter steelhead as rearing options are being developed.

(2) Stringent goals to restrict the number of hatchery steelhead migrating into upstream spawning areas would be established to minimize genetic risks to wild steelhead. WDFW studies (Bradford et al. 1996) have shown that the falls at KFH is virtually a complete barrier for hatchery winter steelhead, so 100% of these fish can be excluded from critical natural production areas. Using the current brood stock in most years only a few hundred hatchery winter steelhead ascend the KFH ladder and only a small winter fishery occurs above KFH. Thus, excluding hatchery winter steelhead from upstream migration would be expected to have little impact on the sport fishery but would substantially increase protection for wild steelhead. The hatchery fish captured in the ladder would be recycled (transported) to the lower river to provide anglers additional harvest opportunities, and/or carcasses might be placed for nutrient enrichment An evaluation of the benefits of recycling (e.g., fishery contributions, reduced spawner overlap) or distribution of carcasses into the natural environment could be considered for incorporation into future monitoring and evaluation planning.

The status of wild summer steelhead in the Lower Columbia ESU portion of the LCSCI area was identified by NMFS as of particular concern (Busby et al. 1996), due to their broadly depressed status. Conservation actions in the Kalama River may provide important elements for wild summer steelhead in the LCSCI area. Recent WDFW research (Bradford et al. 1996) found that summer steelhead apparently jump the falls in substantial numbers from June through August. Approximately 50% of the total hatchery summer steelhead escapement passes in this way. In 1997, WDFW installed a seasonal barrier that was very effective in reducing jumper success. With a change in rearing location to the Fallert Creek Hatchery, thus encouraging homing and harvest in the lower river, and barrier modification that would limit the passage of hatchery steelhead to the fishway, the primary spawning and rearing area for wild summer steelhead would be protected from hatchery steelhead. These change would reduce the unadjusted percentage of hatchery summer steelhead spawners from 75% to approximately 15% depending on the success of recycling and trapping and the strength of the wild run. This would still be above the level recommended by any of the genetic guidelines in the WSP FEIS (WDFW 1997a) or in existing guidance from NMFS (NMFS 1997c) . Thus, to meet WDFW's interim target of 10% hatchery spawners, the summer smolt releases would be adjusted to 60,000 and the winter releases to 70,000.

Just as the existing fishway and trap at KFH would provide important opportunities for implementation of conservation measures in the short and long term, facilities at KFH would also provide important opportunities for needed stock status monitoring,

and evaluation of a range of implementation effectiveness questions. Genetic and other biological questions regarding hatchery and wild steelhead have been investigated in the Kalama River watershed since 1974. As a result a sizable amount of information has accrued that would be applied toward monitoring and evaluation issues in the context of conservation needs for Lower Columbia River steelhead. For more detail, see the Monitoring and Evaluation sections (Appendix 6) of the LCSCI.

The Kalama River originates from springs at the base of Mt. St. Helens within the Gifford Pinchot National Forest. For most of its course the river flows through private forest lands. As mentioned previously for the Lewis River, the Kalama watershed is part of WDFW's ILM effort. To reiterate, the ILM effort is a WDFW-lead cooperative management approach among landowners, the public, and fish and wildlife managers to prepare, implement, and evaluate management plans for fish, wildlife, and their habitats at the landscape level. Wild steelhead protection and restoration goals, objectives, and measures will be an important element of this continuing process.

Tier 2

EAST FORK LEWIS RIVER -- Both wild summer and wild winter steelhead are present in the EF Lewis River. The depressed summer-run stock was grouped into Tier 2, whereas the depressed winter-run form was grouped in Tier 3.

Recent investigations suggest that introgression from hatchery to wild steelhead has been relatively low (Phelps et. al. 1997). Historically, winter steelhead predominated but the abundance of summer steelhead was sufficient to provide a viable sport fishery. Currently, WDFW manages this water for a mixture of summer and winter hatchery and wild fish (index escapement goals for wild steelhead are 814 summer and 204 winter fish, respectively). Approximately 115,000 winter and 95,000 summer steelhead smolts are released annually from hatcheries outside the EF Lewis basin. To explore the opportunity for this to be a sanctuary water, alternatives associated with major reductions in stocking levels have been considered. Three alternatives are apparent at this time which vary in the extent to which they afford protection to wild steelhead stocks. Each alternative would be expected to increase the level of wild steelhead protection from the status quo. The alternatives are:

1. completely eliminating releases of hatchery steelhead in the EF Lewis,
2. eliminating releases of hatchery summer steelhead but continuing to release hatchery winter steelhead, and
3. using a combination of strategies (e.g., downstream stocking locations, increased harvest of hatchery fish, weirs/traps to exclude hatchery fish from natural spawning areas) to keep hatchery and wild steelhead from interbreeding, thus protecting wild steelhead in the upper watershed.

The EF Lewis River has characteristics that make it an excellent candidate for designation as a sanctuary or reserve (where hatchery steelhead would not be released or allowed access to wild steelhead production areas) from a fish management perspective, at least. These include:

(1) The upper EF Lewis River basin flows through the Gifford Pinchot National Forest, land owned and managed by the USFS. This represents a sizable area and the fish habitat within it is of higher quality than most waters in the ESU. Several activities and programs in the basin are ongoing and will benefit wild steelhead resources. These include WDFW's Integrated Landscape Management (ILM) program in the Lewis and Kalama watersheds, and the USFS's Watershed Analysis/Forest Planning process. The ILM program is a WDFW-lead cooperative management approach involving landowners, the public, and fish and wildlife managers to prepare, implement, and evaluate management plans for fish, wildlife, and their habitats at the landscape level. The USFS Forest Management Planning process is an effort to improve analysis and management of USFS lands for fish, wildlife, and other values. In addition, Lucia, Moulton, Lewisville, and Daybreak Parks are owned and managed by Clark County. This, coupled with the ILM program and federal land management in the headwaters, improves the prospect that wild steelhead habitat and public access for various uses might be expected to be maintained or increased on into the future.

(2) The wild winter steelhead stock in the EF Lewis has unique qualities. The current state record for winter steelhead is a 32lb. 12oz. fish caught in 1980. In addition this river supported a higher percentage of larger fish (over 20 lbs) than other rivers within the LCSCI area, with the possible exception of the Cowlitz River stocks. The EF Lewis River is one of four rivers in the LCSCI area to have summer steelhead. Run timing of these fish was relatively early and thus these runs were termed "springers" by local anglers. While not as numerous or large in size as winter steelhead they had a devoted following by fishers because of their renown fighting abilities.

(3) There are no steelhead, trout, or salmon hatcheries present on the EF Lewis River. It is the largest river in the Lower Columbia River steelhead ESU without a hatchery that produces anadromous fish. The NF Lewis River, to which the EF is a tributary, has three hatcheries - two currently producing salmon and one producing steelhead and trout. Designating the EF Lewis a reserve or sanctuary will afford a diversity of angling opportunities to fishers in the local area. However, the benefits of this local angling diversity must be weighed against the genetic risk posed by hatchery strays from the NF that may enter the EF Lewis and interbreed with the wild stock.

(4) Lucia Falls is located at River Mile 21.3 and presents a barrier to upstream passage by salmon. The remaining 20 miles of the EF Lewis River above the falls are accessible only to steelhead. It is further believed that winter steelhead passage opportunities were limited at Horseshoe and Sunset Falls (River Miles 29.7 and 32.7 respectively). Steelhead in these upstream areas devoid of other anadromous fish would be expected to be highly productive compared to steelhead below Lucia Falls which developed in sympatry with coho and chinook salmon.

(5) In addition to providing anglers a chance to fish for wild steelhead in the EF Lewis River, steelhead viewing activities are an important non-consumptive use. Clark County owns park land at Moulton Falls. Citizens stop at this park to enjoy the

waterfalls and some people come specifically to watch steelhead leap at the falls. This is one of the few rivers in the LCSCI area where an opportunity exists to view and appreciate wild steelhead in their natural environment.

Clark County recently purchased Lucia Falls, a site closer to Vancouver and destined to become even more popular with the public than Moulton Falls. At Lucia Falls, a private enterprise placed a camera under the falls to view steelhead jumping. An excellent opportunity currently exists to work with the county to develop this site for fish viewing. Additional viewing opportunities exist at Sunset Falls, which is owned by the U.S. Forest Service.

Designating the EF Lewis River as a sanctuary or reserve would provide a strong component of the overall conservation and restoration plan for the lower Columbia ESU. However, it is possible that further review and discussion may suggest reserve status applied to the upper reaches may be more acceptable than designation of the entire EF Lewis River. To do so it would be necessary to develop the capability to exclude hatchery fish from natural production areas in the upstream reaches using stocking level adjustments and investment in adult traps.

The EF Lewis River is a large basin with peak flows in excess of 19,000 cfs, making effective mainstem adult trapping difficult. Although existing features at Lucia Falls might provide a limited opportunity further review and scoping of all options and costs would be needed. Another option is to manage the imprinting and homing of hatchery fish for return to targeted areas. Hatchery steelhead smolts "imprint" to their areas of release and tend to return and hold there for a time on their upstream migration. Hatchery steelhead smolts released into small tributaries imprint there and then return to the release sites. It is possible that hatchery steelhead release sites may be located in small upstream creeks that would allow harvest of adults migrating up the mainstem to release sites, but that also would allow for effective trap operation in small creeks to capture and exclude hatchery adults avoiding harvest. Captured adult hatchery fish would be recycled to lower river areas, released in lakes, or used for instream nutrient enhancement. Wild steelhead and salmon would be passed upstream of the traps.

Regardless of imprinting or trapping options, adjustments in the number of smolts stocked would be required to meet the interim target of 10% hatchery of the spawning population being comprised of hatchery spawners given predicted homing, trap efficiencies, and wild escapement. Smolt stocking levels would be 25,000 summer steelhead smolts and 90,000 winter steelhead smolts.

WASHOUGAL RIVER -- The Washougal River summer stock is grouped in Tier 2 whereas the winter stock is in Tier 3.

The Skamania Hatchery on the North Fork of the Washougal River is currently the broodstock collection site for the entire Lower Columbia River summer steelhead program with the exception of the Cowlitz and Merwin hatcheries. Broodstock are intermittently collected from adults returning to the Washougal River for winter steelhead hatchery

production. Often, winter steelhead females fail to ascend the falls located immediately below the steelhead hatchery, and eggs for the winter-run program are then collected at Merwin Dam. Skamania Hatchery summer steelhead were used to start a summer broodstock, and a combination of Skamania and Beaver Creek hatchery winter steelhead were used to start a winter brood stock at the Merwin Hatchery.

Wild winter and wild summer steelhead stocks are depressed in the Washougal River with recent escapements estimated to be less than 500 spawners. Current spawner escapement goals for wild winter and summer steelhead are 841 and 1,210, respectively. Summer steelhead have predominated in the North Fork and in the area above Salmon Falls on the mainstem, and the proportion of hatchery steelhead spawning with wild fish is higher than desired. To reduce this proportion, hatchery steelhead need to be segregated from wild steelhead during spawning. A combination of related strategies are needed to address this problem, including:

1. lower river smolt releases,
2. increased harvest of hatchery fish, and
3. exclusion of hatchery fish from spawning areas in the upper river to reduce interbreeding risks with wild steelhead.

Summer and winter hatchery steelhead smolts would be released in the lower Washougal River. In previous years some hatchery summer and winter steelhead smolts were released directly from the Skamania Hatchery, but a greater percentage were released off-station at Hathaway Park. In those years ocean survival was better and catch rates in the Washougal River were high. From 1991 to 1995, most hatchery smolt releases have been made on site at the Skamania Hatchery and the catch rates in the Washougal have decreased. High numbers of hatchery summer and winter steelhead hold in the few pools in closed waters just below the hatchery and are unavailable to anglers. In addition many winter steelhead are not able to leap the falls to access the hatchery trap. Redistributing some of these hatchery winter smolt plants to a lower river tributary with a trap combined with an emphasis on selective harvest in those areas would increase recreational opportunities while also benefiting wild steelhead by reducing the numbers of hatchery steelhead in the river during the spawning season.

Wild summer steelhead predominate in the Washougal River above Salmon Falls. During annual snorkel surveys, low numbers of hatchery steelhead have been observed. Trapping steelhead in the Salmon Falls fish ladder or operating the existing weir at the Washougal Salmon Hatchery during appropriate times would be used to exclude hatchery steelhead from upstream natural production areas while passing wild fish. Hatchery steelhead captured in the trap or weir would be recycled to the lower river to provide additional harvest opportunity, and/or could be distributed as carcasses to the upper watershed to return nutrients to the system and contribute to other ecosystem values.

Similar to the above approach for the mainstem Washougal River, conservation strategies could also be applied to the NF Washougal River. Although logistics and costs may make this a longer term (Phase 2) proposition, the installation and operation of a floating weir just above the Skamania Hatchery fish ladder could be pursued. A weir would allow the numbers of

hatchery steelhead that ascend the North Fork to be managed, thereby reducing risks of their interbreeding with wild fish. Since many hatchery winter steelhead spawn below the hatchery, modification of the barrier below the hatchery would increase the collection rate at the hatchery reducing the genetic risks. As mentioned for the mainstem, trapped hatchery fish in excess of production needs could be recycled to the lower river and/or suitable carcasses could be distributed to the upper reaches to provide nutrients to the system and contribute to other ecosystem values.

To meet the interim limit of 10% hatchery spawners in the spawning population, some reductions in stocking levels are likely to be needed for both summer and winter steelhead even the proposed trapping improvements are implemented. The level of reduction needed will be dependent the effectiveness of trapping hatchery adults after the sport fishery.

Tier 3

GRAYS RIVER -- The Grays River flows into the lower Columbia River in the westernmost portion of the LCSCI area. The river contains a population of wild winter steelhead as well as a depressed population of wild chum salmon (WDF et al. 1993). The population of chum salmon is the largest in the Columbia River but is small and vulnerable due to limited spawning area, and will be considered for threatened or endangered status under the ESA. A salmon hatchery is present in the basin on the West Fork of the Grays River. Because of ecological interactions risks to the wild chum population, and to aid chum recovery, releases of hatchery steelhead smolts may cease in this system. This action would also benefit the currently depressed wild winter steelhead population by reducing risks that hatchery steelhead will interbreed with wild steelhead.

Historical data suggest that the Grays River was one of the top producers of wild steelhead in the lower Columbia. A previous study (Rothfus et al. 1957) estimated that the wild steelhead population numbered 4,000 fish. The escapement goal for the wild winter steelhead is 1,486, and recent escapements have averaged about 830 fish. WDFW has released about 40,000 hatchery winter steelhead from the Beaver Creek Hatchery each year. WDFW is now rearing and releasing the steelhead smolts from the Grays River Hatchery. This move coupled with the trapping of returning adults will reduce the proportion of hatchery spawners. The effectiveness of this action will be based on adult trapping efficiencies.

HAMILTON CREEK AND SMALL COLUMBIA RIVER TRIBUTARIES -- These small tributaries, distributed in the LCSCI, are presumed to have wild steelhead population sizes of less than 100 spawners each. They do not support significant steelhead fisheries. They are associated with the Hamilton Creek winter-run stock and include Rock, Carson, Kanaka, Woodward, Hardy, Indian Mary, Lawton, and Gibbons creeks. Flows are seldom sufficient to allow steelhead entry except in the winter, and thus wild winter steelhead predominate in these streams. These creeks, with the exception of Hamilton and Rock creeks, are not stocked with hatchery steelhead smolts and natural production is believed to be from wild steelhead. Because of their wide distribution, these small streams are reasonable candidates to be designated reserves or sanctuaries or reserves where hatchery steelhead would not be stocked.

Hatchery smolt stocking levels in Hamilton Creek should be reduced to keep the percentages of hatchery fish in spawning populations within appropriate levels. Analyses suggest this would require reductions in the number of hatchery smolts stocked. Currently, 5,000 hatchery winter steelhead are released into the Hamilton Creek. Given the uncertainties associated with this population and substantial concern for the wild chum population, a reduction or elimination of hatchery steelhead smolts is needed. Wild chum salmon may be especially sensitive to hatchery steelhead stocking. Steelhead fishing in this creek generally occurs at moderate levels.

Although the status and specific characteristics of the winter steelhead population in Rock Creek are unknown, it is suspected that the wild population numbers about 50 spawners. The stream runs through the town of Stevenson and a moderate steelhead fishery now exists on hatchery returns from plants averaging 5,000 smolts. Only about a half mile of stream is accessible to anadromous fish before a barrier falls is encountered which blocks fish passage. WDFW has proposed a longer term (Phase 2) approach such as use of a weir/falls trap could be developed to reduce the proportion of hatchery steelhead in wild steelhead spawning areas.

COWEEMAN RIVER -- The escapement goal in the Coweeman River, a Cowlitz River tributary, is 1,064 wild steelhead. This goal was reached in 1987, but in recent years estimated escapements are down to about 400 fish. Currently, 45,000 hatchery winter steelhead smolts are released from conditioning ponds in the lower and middle reaches of the river, and from direct releases at angling access sites in the middle river reaches. It is proposed that the number of smolts released would be reduced to no more than 20,000 and adult small traps be installed at the outlets of these acclimation facilities. The reduced plant and acclimation would reduce hatchery vs. wild interbreeding and ecological impacts, leading ultimately to improved wild steelhead stock status.

GREEN RIVER -- The Green River, a tributary of the NF Toutle River, historically supported wild winter steelhead there is little evidence that wild summer steelhead production occurred. The status of the wild winter steelhead run is currently depressed. Recent average spawner escapement in index areas is estimated to be less than 200 fish. Based on recent studies, Phelps et. al. (1997) suggested that relatively high level introgression had occurred from hatchery to wild steelhead in the Green River. Conservation efforts should focus on wild winter steelhead and strategies for possible compatible use of hatchery summer steelhead. Currently, 30,000 summer steelhead are released annually into the Green River. WDFW has recently changed the hatchery smolt program from a direct release to acclimation and direct release at Green River Hatchery (RM 1) with limited off station releases. By emphasizing releases of hatchery summer steelhead in lower river areas coupled with possible heightened harvest intensity and adult trapping in the fall, interactions with wild winter steelhead can be reduced. As an interim measure, hatchery summer steelhead smolt plants would be reduced to 12,000 fish to protect wild winter steelhead.

TOUTLE RIVER -- The Toutle River is a major tributary of the Cowlitz River watershed. It has two primary forks, the North Fork (NF) and South Fork (SF). A hatchery exists on the

Green River, a tributary of the NF Toutle whose confluence is 8 miles up the NF Toutle; thus the Green River would not be included in the sanctuary category. Historically, winter steelhead predominated in all of the rivers of the Toutle River watershed, and summer steelhead were few. The stocks and habitat in this system were heavily impacted by the 1980 eruption of Mt. St. Helens; however, wild populations remain. Currently, WDFW manages the NF Toutle with emphasis on wild steelhead and sea-run cutthroat. A plant of 30,000 summer steelhead has been made into the NF Toutle but this has provided minimal recreational opportunity and will be discontinued because turbid water in the summer makes fishing success poor, while genetic risks to wild steelhead are greater than desired. The sediment retention structure in the NF Toutle River does not allow fish passage. High turbidity likely affects steelhead production in this stream.

SF TOUTLE RIVER -- The South Fork of the Toutle River currently supports a wild winter steelhead population of between 600 and 1,500 fish, compared to a current escapement goal of 1,058. After recently peaking, returns have since declined. This stock was categorized as healthy in WDF et al. (1993), but has been proposed to be downgraded to depressed in 1997 (Appendix 2). The winter fishery is catch and release for wild steelhead with selective fishery regulations in effect. A total of 30,000 summer steelhead smolts have been stocked into these waters annually. Fishing on these hatchery summer steelhead has been popular with anglers. Recent studies suggest gene flow from hatchery to wild steelhead in the SF Toutle has been low (Phelps et al. 1997), perhaps due to the relatively short length of time that summer steelhead have been stocked. Because a

significant population of summer steelhead was not indigenous to the SF Toutle, and to reduce risks to declining wild winter steelhead, the hatchery summer program may need to be modified or eliminated.

Resident trout fisheries in Castle and Coldwater lakes are currently managed by WDFW for wild trout and selective fishery regulations are in effect. These lakes are located in the upper NF Toutle drainage. Land managed by the U.S. Forest Service (USFS) in the NF Toutle basin has been managed as a natural area since the eruption of Mt. St. Helens in 1980. Therefore, sanctuary water status in the Toutle River watershed is consistent with USFS natural resource management in the watershed.

If the SF Toutle River does not receive sanctuary status, reductions in stocking levels and adult traps at acclimation facilities will be needed. Currently hatchery smolts are acclimated at the wooden acclimation structure located at the mouth of Brownell Creek. Based on the current status of wild steelhead, anticipated angler catch and adult trap efficiency smolt plants of 12,000 hatchery steelhead are recommended to meet WDFW interim target of 10% hatchery spawners. Future stocking level adjustments (up or down) will be made based on the status of wild winter steelhead and the proportion of hatchery spawners.

Tier 4

SALMON CREEK -- Salmon Creek is a tributary of the Columbia River that runs through the greater Vancouver area adjacent to Klineline Pond. The quality of Salmon Creek habitat is poor due to considerable impacts associated with development and urbanization. The highest quality habitat exists in the upper watershed. The status of wild winter steelhead in the stream is depressed, with an estimated wild spawner population of less than 100 fish, compared to the current wild steelhead escapement goal of 400. Clark Public Utilities currently supports a net pen program to rear both hatchery winter steelhead and sea-run cutthroat for harvest benefits, and has actively participated in habitat conservation and restoration efforts. Hatchery releases and associated harvest would be concentrated in the Klineline area and the habitat in the upper reaches would receive focused attention as an important area for wild steelhead.

Recent discussions between Clark County, Clark Public Utilities, and WDFW have focused on opportunities to continue building partnerships on current watershed restoration efforts, wild fish recovery, public education, and maintaining local fishing opportunities consistent with wild fish protection. An option being discussed involves developing an adult steelhead trapping capability upstream of Klineline Pond. A structure may be designed that would: (1) help exclude hatchery steelhead from the upstream areas used by wild steelhead, (2) focus fishery opportunity near Klineline Pond where public access exists, (3) provide a monitoring capability to obtain accurate counts of adult wild salmon and steelhead, (4) provide a potential wild brood stock source for future Salmon Creek supplementation programs if such is deemed appropriate in the future, and (5) provide a public education opportunity for local citizens and schools.

ABERNATHY CREEK -- Recent escapement estimates for wild winter steelhead in

Abernathy Creek have averaged about 140 fish. Hatchery winter steelhead smolts have been planted into this stream since the 1960s; recent smolt releases have averaged about 7,000 fish. A hatchery was constructed along the creek in the 1950s by the U.S. Fish and Wildlife Service for salmon rearing and research. An electric weir is currently in operation that, under most conditions, directs fish encountering it into the hatchery. It is proposed that an agreement with the U.S. Fish and Wildlife Service be developed to provide acclimation for hatchery steelhead released into the creek. Returning hatchery steelhead encountering the electric weir would be recycled or removed to protect upstream wild steelhead production areas.

SKAMOKAWA CREEK -- This small stream flows directly into the Columbia River and contains a population of wild winter steelhead. Recent escapement estimates for wild winter steelhead in Skamakowa Creek average about 200 fish. Although the stream has received about 5,000 hatchery winter run smolts it does not appear that many are captured (based on punchcard harvest report card data). Therefore, it is proposed that hatchery smolt releases into this stream be terminated.

COWLITZ RIVER -- Mayfield Dam was constructed in 1961 on the Cowlitz River. After the construction of Mossyrock Dam in 1968, wild steelhead returns plummeted from over 11,000 due to lack of juvenile outmigration and adult upstream passage. Since that time the lower Cowlitz River has been managed primarily to maximize recreational opportunity from hatchery steelhead. The Cowlitz Hatchery, with funds from Tacoma City Light, annually produces 1.2 million steelhead smolts to mitigate for steelhead losses. It is estimated that wild steelhead production in this part of the river is minimal but key wild production areas exist in lower river tributaries such as Olequa Creek.

Various measures may contribute to bolster wild steelhead production in the upper Cowlitz River (see Subchapter 3: Hydropower/Dams, in Chapter 14). These include the ongoing Cowlitz Falls project and a potential wild steelhead restoration project in the Tilton River under the Northwest Power Planning Council's Fish and Wildlife Program. The Bonneville Power Administration (BPA) is currently funding restoration efforts for anadromous salmonids that have been precluded from entry into the upper Cowlitz and Cispus rivers as a result of blockages formed by a series of dams in the watershed. As a part of that effort, WDFW has proposed to restore a naturally reproducing winter steelhead population in the area using marked hatchery smolts and unmarked fry plants of Cowlitz River stock origin. Using Wild Steelhead Release regulations, the marking of hatchery smolts would enable harvest of returning adults while protecting wild stocks, and any escapement from the fishery would be intended to contribute to natural spawning. Since the released hatchery fry would not be marked, any adult returns from them would not be available for harvest and would spawn naturally. This actively managed project depends on hatchery steelhead production and has focused goals for wild steelhead protection and restoration. Winter steelhead hatchery plants would continue at 75,000 smolts under the restoration program.

Phase 2 conservation strategies for lower Cowlitz River steelhead would include review and development of information on wild steelhead distribution, production, and status. Options to reduce risks to wild steelhead would then be identified. Ecological interactions between

hatchery and wild steelhead may be reduced by changing timing and locations used for smolt releases, and avoiding potential residualism. The risks of unintentional straying by Cowlitz River hatchery steelhead into neighboring watersheds would be investigated and managed as appropriate. Finally, strategies to effectively increase harvest of hatchery steelhead would be explored. If successful, such strategies would decrease the number of hatchery steelhead in the river, in turn decreasing the genetic and ecological interactions risks they impose on wild steelhead. Protection of key wild production areas from hatchery strays is another proposal. This would include adult traps on important tributaries such as Olequa Creek. Although only in the early scoping stages, a similar project may have merit in the Tilton River, a tributary just upstream from Mayfield Dam. This project might involve restoring winter steelhead and might be associated with FERC relicensing of Mayfield Dam.

NORTH FORK LEWIS RIVER -- The circumstances for wild steelhead in the lower part of the North Fork of the Lewis River are similar to those in the lower Cowlitz River. Merwin Dam, constructed in 1931, blocked adult steelhead spawners from reaching the abundant and high quality habitat of the upper North Fork Lewis River. The recently constructed Merwin Hatchery, funded by PacifiCorp, currently produces 250,000 steelhead smolts to mitigate for lost production. An additional 50,000 summer steelhead smolts raised at Skamania Hatchery are released into the river to provide summer steelhead fishing opportunity. Similar to hatchery operations in the Cowlitz River, both summer and winter steelhead are produced, providing year around angling opportunity.

Cedar Creek, a tributary of the NF Lewis River, is a major production area for wild steelhead for NF Lewis summer and winter steelhead stocks. The management emphasis in Cedar Creek would be on protecting and restoring wild steelhead. Cedar Creek is not stocked with hatchery steelhead smolts. In addition, a fish ladder at a Grist Mill about 2 river miles from the confluence with the NF Lewis River affords an excellent opportunity to exclude stray hatchery fish from wild steelhead spawning areas and provide a sanctuary or reserve to protect wild steelhead within the NF Lewis watershed. In January 1998, an adult trap was installed in the fish ladder to exclude hatchery steelhead from upstream wild steelhead production areas. Hatchery steelhead have been recycled to the lower Lewis River or transplanted into Horseshoe Lake. Johnson Creek is the second largest NF Lewis tributary and is a key production area for wild salmonids. Options to achieve WSP genetic performance standards are currently being explored there.

Phase 2 conservation strategies for NF Lewis River steelhead would also include review and development of information on wild steelhead production and status. Options to reduce risks to wild steelhead would be identified. Modifications to reduce ecological interactions between hatchery and wild steelhead may include changes in timing and

locations used for smolt releases, and avoiding potential residualism. The potential risk of unintended straying from the NF Lewis River to neighboring watersheds would be investigated and managed as appropriate. Finally, options would be explored to increase harvest of hatchery steelhead, thus decreasing genetic and ecological interactions risks to wild steelhead.

Tier 5

ELOCHOMAN RIVER -- The Elochoman River contains a run of wild winter steelhead and a small return from introduced hatchery summer steelhead. The escapement goal is 626 wild steelhead and recent returns have averaged about 240 fish. Two hatcheries exist in the watershed; Elochoman and Beaver Creek hatcheries. The Beaver Creek Hatchery, located on an Elochoman River tributary (Beaver Creek), currently releases about 100,000 winter and 20,000 hatchery summer steelhead, respectively. The Beaver Creek Hatchery winter-run stock was developed from steelhead from the Elochoman and Cowlitz rivers, with some input from Chambers Creek stock.

The predominant natural production area for wild steelhead in the Elochoman River exists in upriver areas, upstream from the Beaver Creek Hatchery. To provide harvest opportunity on hatchery steelhead while protecting wild steelhead in the upper reaches, several actions are proposed. All hatchery steelhead released into the river would be reared at the Beaver Creek Hatchery to encourage homing to the facility. Hatchery steelhead would be volitionally released from the hatchery to minimize the potential for ecological interactions. Residuals would not be released. Improvements would be made to increase the efficiency of the trap at Beaver Creek to exclude hatchery steelhead from upstream areas. At the Elochoman Hatchery, which is positioned upstream from the Beaver Creek facility, the existing trap would be made more efficient and operated to exclude upstream migrating hatchery steelhead. The potential to recycle hatchery fish trapped at Beaver Creek and Elochoman hatcheries that are not needed for broodstock purposes would be explored. The area open to angling in the summer could be expanded closer to the barrier dam to increase harvest of hatchery steelhead.

Unless the status of wild winter steelhead improves, reductions in stocking levels will be required in the interim to protect wild steelhead from genetic risks even with improvements to adult trap efficiency mentioned above. Based on the current status of wild steelhead, anticipated angler catch and adult trap efficiency smolt plants of 60,000 hatchery steelhead are recommended to meet the interim maximum of 10% hatchery spawners. Future stocking level adjustments (up or down) will be made based on the status of wild winter steelhead, effectiveness of the adult trap and rearing strategy, and the percentage of hatchery spawners.

MILL CREEK -- Mill Creek is a small tributary to the lower Columbia River in the Southwest Washington ESU, west of Longview near Abernathy Creek. This watershed supports a small run of wild winter steelhead, sea-run cutthroat, and salmon. Since no hatchery steelhead are released in this system, it would be designated as a reserve or sanctuary to protect wild steelhead.

GERMANY CREEK -- Recent escapement estimates for wild steelhead have averaged about 120 spawners. Hatchery winter steelhead have been released since the 1960s; currently averaging about 7,000 smolts. No hatcheries or weirs exist in the Germany Creek watershed. Upon further review, stocking could be terminated and Germany Creek. Alternatively, smolt stocking levels could be reduced to lower genetic risks currently imposed on the wild population.

Habitat

The following actions have been identified as priority conservation actions for the Lower Columbia Steelhead Conservation Initiative. Actions are organized first by the streams where the work will be done (i.e., in order of the Tier 1-5 priority streams/stocks as identified in Chapter 12 and then by the responsible agency or organization. The actions are briefly described and are identified as being done with existing resources (Phase 1 Actions) or as dependent upon receiving additional resources that have been requested (Phase 2 Actions).

An overarching issue for the entire LCSCI area is the need to better characterize habitat conditions for all the habitat factors for decline at the watershed level. A more in-depth assessment than has been conducted up to this point is needed for each watershed in order to quantify problems and set priorities for the actions needed to protect and restore healthy habitat conditions. An assessment/inventory of habitat factors for decline in the LCSCI area at the watershed level will be conducted by June, 1998. This initial assessment will be based upon existing data and the best professional judgment of habitat experts. The assessment will be used to better identify critical data needs and to target where further monitoring efforts will be focused. This assessment will also be used to develop interim performance measures and benchmarks that are tailored to the habitat factors for decline in the LCSCI area and that will be included in the next iteration of the LCSCI plan.

The priority actions described below will be better focused as a result of this initial assessment. As planning and implementation to protect and restore habitat proceeds at the watershed level, more in-depth information and sophisticated analysis will be needed to ensure that habitat protection actions and restoration projects are effective. Many of the actions described below are a part of an evolving capability to provide the needed level of information and analysis at the watershed level over time.

Tier 1

Kalama River (Tiers 1 and 2)

Ecology/EILS Program

Title: Ambient Monitoring.
Description:
Phase 1 Actions: Monthly water quality monitoring near mouths of Cowlitz, Kalama, and EF Lewis rivers (core stations). Additional stations may be added in the LCSC area, subject to prioritization in FY99. Parameters sampled include temperature, pH, oxygen, suspended solids, and nutrients.
Timeframe: FY98-03 (core stations); FY-00 (additional stations, if any).
Cross-References: ECY-101.
Contact: Will Kendra (360) 407-6698.

Title: Stream temperature monitoring.
Description:
Phase 1 Actions: Continuous temperature monitoring during summer low flows near the mouths of the Cowlitz, Kalama, and EF Lewis rivers.
Timeframe: FY98-03.
Phase 2 Actions: Continuous temperature monitoring during summer low flows at the same sites sampled during biodiversity/habitat monitoring (action ECY-202). Monitoring for long-term trends in stream temperature.
Timeframe: FY99 - Wind/Washougal basins; FY00 - Lewis/Kalama basins; FY01 - Toutle/Coweeman/Lower Cowlitz basins. After 3 years, assess whether to repeat this cycle in FY02-05, or complete coverage of LCSC area by sampling Upper Cowlitz basin in FY02 and Grays/Elochoman basins in FY03.
Cross-References: ECY-103, ECY-203.
Contact: Will Kendra (360) 407-6698.

Ecology/Water Quality Program

Phase 1 Actions

Action: Implementing the agency's watershed management approach to water quality will provide additional protection and enhancement of salmon bearing streams. The scoping process for this approach will begin in July 1998 as the first year of a five year process. Staff from the Vancouver Field Office will be identifying watershed partners and available information to incorporate into developing the framework for phase 2 actions. Staff will continue to provide technical assistance and educational programs as well as conduct compliance and enforcement actions. Timely review of SEPA documents and other permit mechanisms will help minimize new impacts to water quality.

Timeframe: As needed FY 98- 99, 2000 - 2001.
Cross-Reference: Watershed Management ECY-151.
Contact: Dave Howard (360) 690-4796 and Rusty Post (360)690-4787.

Action: Regional staff will work with stormwater ordinances, and provide SEPA review for stormwater-related proposals. This will include providing (if desired) technical assistance to Cowlitz County regarding adopting and implementing a stormwater management program.
Timeframe: FY 98 – 99, FY 2000 – 2001.
Cross-Reference: ECY-151.
Contact: Gary Kruger (360)407-0238.
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Phase 2 Actions

Action: The Kalama River is currently listed on the CWA Section 303(d) list for temperature and pH. Prioritized decline factors for steelhead in this watershed are: excessive fine sediment; high winter flows/low summer flows; high stream temperature; lack of channel and floodplain complexity; reduced riparian habitat; and fish passage. A comprehensive approach to water quality protection and habitat restoration is needed and will be worked on with local governments, landowners, other agencies and interested parties. This approach will be done cooperatively in a manner that includes monitoring and restoration/protection action development through watershed analysis-based TMDL/OPCs. Adaptive management will be built into this approach to provide long-term focus on watershed health. Identify and assist with development of local monitoring and educational efforts.
Timeframe: Initiate FY 99; Monitor and develop analyses with other participants FY 2000-2001; Support restoration efforts and implement adaptive management FY 2002-2003.
Cross-References: ECY-252, ECY-254.
Contact: Dave Howard (360) 690-4796; Joanne Schuett-Hames (360)407-6296.

Action: In the Kalama watershed forest land conversion to other uses is rapidly occurring and without attention to cumulative effects, will create permanent loss of stream habitat and water quality. By the year 2002 local governments will take over the regulation of these important forest practices. Ecology will provide technical support to the county for development of forestry conversion ordinances that are protective of the aquatic habitats including those necessary for steelhead.
Timeframe: FY 2000-2001, or FY 2002-2002 based on county schedule.
Cross-Reference: ECY-254.
Contact: Dave Howard, (360)690-4796.

Ecology/Water Resources Program

Phase 2 Actions

Action: Withhold Action on Water Rights. During the process of determining and adopting instream flows, it will be necessary to withhold action on pending and new water right applications until instream flows are determined. We would withhold action on water rights in Wind, E.F. Lewis, Washougal, and Kalama River basins while the instream flow studies are being done by Ecology. Ecology can formally withdraw a water body from appropriation by rule if it will require a year or more to determine or adopt instream flows, or if it will require less than one year, Ecology can informally withhold action on water right applications. Implementation depends upon Ecology receiving its agency supplemental budget request and additional supplemental request specific to the LCSCI area.
Timeframe: Would begin in 1998 and continue until instream flows are determined.
Cross-Reference: ECY-278.
Contact: Ken Slattery, 360 407-6603

Action: Determine Instream Flows. Ecology will undertake Instream Flow Incremental Methodology (IFIM) studies on the Wind, Kalama, E.F. Lewis, and Washougal Rivers to assess the fish habitat and provide the information needed to set minimum instream flows by rule. Setting an instream flow will give a water right to the fish and protect them from future water withdrawals. Implementation depends upon Ecology receiving its agency supplemental budget request and additional supplemental request specific to the LCSCI area.
Timeframe: Scoping for study design will be done by April, 1998. Field measurements will be taken May through September, 1998. Computer models will be constructed and calibrated during Fall of 1998. This will require headquarters policy staff and possibly regional staff for field data collection and computer calibration.
Cross-Reference: ECY-279.
Contact: Brad Caldwell (360) 407-6639

Department of Fish and Wildlife

Phase 1 Actions

Action: Excessive fine sediment has been identified as a contributing factor for decline of steelhead in the Kalama River basin. Because the Kalama River basin has an extensive road network, the susceptibility of failure and potential for blockage at stream crossings is large. Yet, adequate surveys to describe the degree and extent of these problems has not been knowingly attempted, especially on private lands. WDFW will work cooperatively with private landowners and WDOT to fully inventory and prioritize road culverts in need of repair or replacement. With landowner and WDOT cooperation, WDFW will complete culvert inventories within 2

years. WDFW will also work cooperatively to acquire funding through grants and other means to achieve full access to historic reaches within the Kalama River basin.
Timeframe: 1998 - 2000
Cross-Reference: DFW-115
Contact: Bryan Cowan (360) 906-6720

Action: WDFW will work cooperatively with Cowlitz County to develop a meaningful Critical Areas Ordinance that adequately protects stream systems.
Timeframe: Immediately
Cross-Reference: DFW-117
Contact: Sam Kolb (360) 260-6365, Bryan Cowan (360) 906-6720

Phase 2 Actions

Title: Kalama River Watershed Monitoring
Actions: Conduct baseline habitat status monitoring survey in the Kalama River watershed. Utilize the TFW monitoring protocols imbedded in the stratified random sampling design developed from the pilot study on Cedar Creek to begin trend assessment of fish habitat condition. Evaluate habitat above the Kalama River adult/smolt trap to begin evaluation of watershed productivity relative to habitat condition. Monitoring would continue on a 5-year interval following this initial survey.
Timeframe: June 1 to November 31, 2000, and at 5-year intervals.
Cross-References: DFW-208, DFW IIIA3.
Contact: Greg Volkhardt (360) 902-2779

Action: Using additional staff to more clearly identify factors limiting the productivity of steelhead and other salmonid species in the Kalama watershed, WDFW, Ecology, Conservation districts, and the USFS will partner to assess habitat and water quality in a complete watershed analysis.
Timeframe: 1998 - 2000
Cross-Reference: DFW-201
Contact: Bryan Cowan (360) 906-6720

Action: With additional staff resources, and in cooperation with the USFS, landowners, volunteer restoration groups, and the conservation districts, WDFW will commit 0.75 FTE's toward habitat restoration in the Kalama Basin. WDFW contributions would include coordination with volunteer restoration groups, bioengineering, basin-wide assessments, planning, priority setting, and ecosystem perspectives, as part of action item DFW-204. Restoration activities would begin on "hot spots" within the basin (those areas obviously needing repair without assessments) and, therefore, could begin when funding is secured. As watershed analyses are complete, restoration activities will follow priorities determined there.
Timeframe: FY 98 - 2003
Cross-Reference: DFW-204

Contact: Bryan Cowan (360) 906-6720

Cowlitz and Wahkiakum Conservation Districts

Phase 2 Actions

Title: Stream Habitat Survey and Habitat Restoration
Description: Cowlitz and Wahkiakum Conservation Districts have submitted a proposal to Department of Natural Resources and Department of Fish and Wildlife's Jobs for the Environment program. There are two key elements to our proposal. First, we intend to continue the stream survey work started under the Displaced fisher program and collect stream habitat data for the Mill Creek (tier 5), Ostrander Creek, Coweeman River (tier 3), and Kalama River (tier 1) watersheds. Second, we intend to continue implementing best management practices based on the data collected. Emphasis for implementing practices will be placed in watershed that have watershed plans or are in the process of plan development.
Contact: Darin Houpt, (360)425-1880

Wind River (Tier 1 and 3)

Ecology/EILS Program

Title: Stream temperature monitoring.
Description:
Phase 1 Actions: Continuous temperature monitoring during summer low flows near the mouths of the Cowlitz, Kalama, and EF Lewis rivers.
Timeframe: FY98-03.
Phase 2 Actions: Continuous temperature monitoring during summer low flows at the same sites sampled during biodiversity/habitat monitoring (action ECY-202). Monitoring for long-term trends in stream temperature.
Timeframe: FY99 - Wind/Washougal basins; FY00 - Lewis/Kalama basins; FY01 - Toutle/Coweeman/Lower Cowlitz basins. After 3 years, assess whether to repeat this cycle in FY02-05, or complete coverage of LCSC area by sampling Upper Cowlitz basin in FY02 and Grays/Elochoman basins in FY03.
Cross-References: ECY-103, ECY-203.
Contact: Will Kendra (360) 407-6698.

Title: Biodiversity and habitat monitoring.
Description:
Phase 1 Actions: Benthic macroinvertebrate sampling and limited habitat assessment on Trapper Creek, tributary to Wind River.
Timeframe: FY98.
Phase 2 Actions: Benthic macroinvertebrate sampling and salmon habitat assessments at about 30 sites per year. Sampling would be primarily stratified-random

on second-order streams using EPA's EMAP design. Monitoring for long-term trends in aquatic biodiversity and salmon habitat quality.
Timeframe: FY99 - Wind/Washougal basins; FY00 - Lewis/Kalama basins; FY01 - Toutle/Coweeman/Lower Cowlitz basins. After 3 years, assess whether to repeat this cycle in FY02-05, or complete coverage of LCSC area by sampling Upper Cowlitz basin in FY02 and Grays/Elochoman basins in FY03.
Cross-References: ECY-102, ECY-202.
Contact: Will Kendra (360) 407-6698.

Ecology/ Water Quality Program

Phase 1 Actions

Action: Implementing the agency's watershed management approach to water quality will provide additional protection and enhancement of salmon bearing streams. The scoping process for this approach will begin in July 1998 as the first year of a five year process. Staff from the Vancouver Field Office will be identifying watershed partners and available information to incorporate into developing the framework for phase 2 actions. Staff will continue to provide technical assistance and educational programs as well as conduct compliance and enforcement actions. Timely review of SEPA documents and other permit mechanisms will help minimize new impacts to water quality.
Timeframe: As needed FY 98- 99, 2000 - 2001.
Cross-Reference: Watershed Management ECY-151.
Contact: Dave Howard (360) 690-4796 and Rusty Post (360)690-4787.

Action: The U.S. Forest Service, Underwood Conservation District and U.S. Fish and Wildlife have identified restoration projects for this watershed. The restoration includes bank stabilization and road closures. Funding for some of this work is currently available. BPA fish mitigation funds and other funding sources are being explored. Ecology will provide technical assistance within current workload constraints and participate in the SEPA review of restoration projects.
Timeframe: As needed FY 98- 99, 2000 - 2001.
Cross-Reference: ECY-155.
Contact: Dave Howard (360) 690-4796 and Rusty Post (360)690-4787.

Action: Provide technical assistance to Skamania County to assist with adoption and implementation of a stormwater management program.
Timeframe: As needed FY 98- 99, 2000 - 2001.
Cross-Reference: ECY-151.
Contact: Gary Kruger (360)407-0238.

Phase 2 Actions

Action: Total Maximum Daily Load/Other Pollution Control (TMDL/OPC) development for Wind River sub-basins in cooperation with other watershed partners. It is expected that the Wind River and some tributaries will be listed on the CWA Section 303(d) list highlighting the importance of this approach. The TMDL/OPC development will complement and strengthen existing restoration strategies by providing collaborative monitoring of temperature and other important fish habitat parameters, and by reviewing stream and hill-slope restoration measures to determine whether they are on track and adequate to achieve water quality standards for temperature and fish habitat. Ecology will work with the other watershed entities to use adaptive management approaches to implement further restoration and watershed protection measures based on monitoring results.
Timeframe: Initiate in FY 99; Monitor and review measures, support restoration efforts, and implement adaptive management FY 2000-2001 and FY 2002-2003.
Cross-References: ECY-251, 254.
Contact: Joanne Schuett-Hames, (360)407-6296 and Dave Howard (360) 690-4796.

Action: In the lower watershed and surrounding areas, forestland conversion to other uses will have significant impacts on stream systems. By the year 2002 local governments will take over the regulation of these important forest practices. Ecology will provide technical support to the county for development of protective forestry conversion ordinances.
Timeframe: FY 2000-2001, FY 2002-2002 based on county schedule.
Cross-Reference: ECY-254.
Contact: Dave Howard, (360)690-4796.

Ecology/Water Resources Program

Phase 2 Actions

Action: Withhold Action on Water Rights. During the process of determining and adopting instream flows, it will be necessary to withhold action on pending and new water right applications until instream flows are determined. We would withhold action on water rights in Wind, E.F. Lewis, Washougal, and Kalama River basins while the instream flow studies are being done by Ecology. Ecology can formally withdraw a water body from appropriation by rule if it will require a year or more to determine or adopt instream flows, or if it will require less than one year, Ecology can informally withhold action on water right applications. Implementation depends upon Ecology receiving its agency supplemental budget request and additional supplemental request specific to the LCSCI area.
Timeframe: Would begin in 1998 and continue until instream flows are determined.
Cross-Reference: ECY-278.
Contact: Ken Slattery, 360 407-6603

Action: Determine Instream Flows. Ecology will undertake Instream Flow Incremental Methodology (IFIM) studies on the Wind, Kalama, E.F. Lewis, and Washougal Rivers to assess the fish habitat and provide the information needed to set minimum instream flows by rule. Setting an instream flow will give a water right to the fish and protect them from future water withdrawals. Implementation depends upon Ecology receiving its agency supplemental budget request and additional supplemental request specific to the LCSCI area.
Timeframe: Scoping for study design will be done by April, 1998. Field measurements will be taken May through September, 1998. Computer models will be constructed and calibrated during Fall of 1998. This will require headquarters policy staff and possibly regional staff for field data collection and computer calibration.
Cross-Reference: ECY-279.
Contact: Brad Caldwell (360) 407-6639

Department of Fish and Wildlife

Phase 1 Actions

Action: The Wind River Restoration Team consists of active members from the USGS, USFS, Underwood Conservation district, WDFW, and others. WDFW will partner with this group to improve habitat conditions where priorities have been established, to advance priorities where assessments have been completed, and to assess watershed conditions in the lower river where they are not yet complete. WDFW will provide expertise to land management agencies and landowners to prevent further habitat declines. WDFW will adopt cautious HPA standards in the watershed, especially with respect to road crossings, constructions, and abandonments.
Timeframe: Immediately
Contact: Dan Rawding (360) 906-6747, Bryan Cowan (360) 906-6720

Action: WDFW will work cooperatively with Skamania County to develop a meaningful Critical Areas Ordinance that adequately protects stream systems.
Timeframe: Immediately
Cross-Reference: DFW-117
Contact: Steve Manlow (360) 260-6383, Bryan Cowan (360) 906-6720

Phase 2 Actions

Title: Wind River Watershed Monitoring
Actions: Conduct baseline habitat status monitoring survey in the Wind River watershed. Utilize the TFW monitoring protocols imbedded in the stratified random sampling design developed from the pilot study on Cedar Creek to begin trend assessment of fish habitat condition. Evaluate habitat above the Wind River smolt trap to begin evaluation of watershed productivity relative to habitat condition. Monitoring would continue on a 5-year interval following this initial survey.

Timeframe: June 1 to November 31, 1999, and at 5-year intervals.
Cross-References: DFW-208, DFW IIIA3.
Contact: Greg Volkhardt (360) 902-2779

Action: With additional funding, WDFW would commit up to 0.75 FTE's to aid habitat restoration efforts within the Wind River basin as part of action DFW-204. Long term commitment is dependent on adequate funding. WDFW contributions would include coordination with volunteer restoration groups, bioengineering, basin-wide assessments, planning, priority setting, and ecosystem perspectives.
Timeframe: FY 98, 99, 2000, 01, as funding and necessity permits.
Cross-Reference: DFW-204
Contact: Lee Van Tussenbrook (360) 906-6704, Bryan Cowan (360) 906-6720

Underwood Conservation District

Title: Wind River Watershed Project
Description: The Wind River Watershed Project was started through the Underwood Conservation District as an attempt to preserve, protect and restore the Wind River steelhead and the health of the Wind River watershed. The ICD applied for and received a $30,000 grant from USFW to start collecting data about the watershed in order to assess problems and prioritize specific watershed problems identified.

Phase 1 Actions
The entire basin has been mapped by ownership. Acreages have been tabulated according to landowner classification (i.e., USFS, DNR, large timber companies, large scale private and small scale private.
The watershed has been mapped according to general land-use categories. All current WEP projects have been mapped.
UCD staff has initiated collection and organization of all known water quality data/interpretation pertaining to the Wind River system.
The UCD and cooperators have completed 18.8 miles of the currently planned stream and riparian zone surveys within the basin.
The UCD has organized and updatable watershed enhancement project (WEP) database. Forty enhancement projects have been documented to date.
Time Frame: A Wind River technical committee was initially organized in December of 1996. The group is composed of representatives of the USFS Mt. Adams RD, USFS - CRGNSA, USF&WS, Skamania County, UCD, WDFW, DNR, USGS and NWSA. Also part of the Wind River Watershed Project was to form a Wind River Watershed Action Committee (AC) in order to identify public concerns and ideas for restoration of the Wind River Watershed. As of January 6, 1998, eight meetings have been held. The AC was originally formed in June of 1997 and by the end of September the group successfully defined project goals, elected officers, established a WEP project ranking process, adopted a consensus approach for decision-making, and initiated "watershed stakeholder presentations" as a feature of each meeting.

Phase 2 Actions

At the latest meeting held on January 6, 1998, of the forty enhancement projects documented, ten had been rated top priority with the top two being financially feasible with the amount of money that the UCD currently has in its budget for the Wind River Watershed Project.

The UCD has just completed a grant application to the Bonneville Power Administration requesting additional funding for the Wind River Watershed Project in order to complete more of the top priority enhancements projects identified by the Wind River technical committee and the Wind River Action Committee. Also, at the January 6, 1998 meeting, information was given by the Department of Ecology on additional grants that may be attainable and the Wind River Action Committee and UCD will be looking at those grant applications along with Skamania County.
Timeframe: Current funding should allow the Wind River Action Committee to complete the two top rated actions along the Wind River in the Spring and Summer of 1998. Funding for the Wind River Watershed Project after completion of the two top priority actions depends on new grant monies including but not limited to the pending BPA grant application. If new grant money is obtained, the Wind River Action Committee will proceed with the remaining top priority actions and monitoring as money allows. The BPA's decision on grant money should be done by Spring of 1998 which would allow additional work on the Wind River to be done in the Summer of 1998 and Fall of 1998 as well.
Contact: Steve Stampfli (509) 493-1936

US Forest Service

Phase 1 Actions

Action: Implement watershed restoration activities funded through flood repair (ERFO and Flood Supplemental) and Job In The Woods appropriations. Target sub-watersheds include Trout, Layout, Dry, and Upper Wind River sub-watersheds. Primary restoration activities include road decommissioning; riparian planting and thinning; and stream bank stabilization; and stream habitat improvements.
Timeframe: In progress; 1998 through 1999.
Contact: Julie Knutson or Brian Bair

Action: Develop comprehensive watershed restoration proposal for entire Wind River system in cooperation with WDFW, YIN, USGS, USFWS, DOE, and Underwood Conservation District. The proposal has been submitted to the Bonneville Power Administration for funding in fiscal years 1998 and 1999. This template proposal may provide an opportunity for requesting restoration funds from other sources.
Timeframe: Done
Contact: Dan Shively (360) 891-5108 or Ken Wieman

Action: Conduct collaborative monitoring and evaluation activities with WDFW, USFWS, YIN, USGS, and others. Activities include smolt production monitoring throughout the Wind River system; estimating annual adult steelhead returns; determining freshwater life history characteristics of juvenile steelhead; conducting annual redd surveys; evaluating spawning gravel quality; and maintaining fish passage operations at Hemlock Dam (located on lower Trout Creek).
Timeframe: In progress; conducted on an annual basis contingent on annual budgets.
Contact: Ken Wieman

Action: Stream habitat inventories. The U.S. Forest Service surveys approximately 5-10 miles of anadromous fish-bearing streams each year in the Wind River system. Information on habitat quality and riparian condition are collected. Data are stored in a Forest Service database system compatible for Geographic Information System programs. The Wind River Restoration Team (WRRT) estimates that only 15 miles of anadromous habitat on Forest Service lands remain to be inventoried, while approximately 30 miles of anadromous habitat on non-Federal lands in the Wind River system require inventory.
Timeframe: July through September; each year.
Contact: Ken Wieman

Action: Conduct water quality monitoring at 10 established stations on federal lands throughout the Wind River system. Primary emphasis is on collection of continuous low-flow water temperature data.
Timeframe: June through September; each year contingent on annual budget.
Contact: Bengt Coffin

Action: Conduct implementation and effectiveness monitoring of land management activities (i.e., road construction, timber harvest operations, watershed restoration projects, etc.). Evaluate the implementation and effectiveness of water quality Best Management Practices (BMPs) each year as part of the Forest's annual Forest Plan monitoring requirements. Results are published each year in the Gifford Pinchot National Forest's Annual Monitoring Report.
Timeframe: March through September; each fiscal year (final reports usually available by spring of the following year).
Contact: John Rollin or Dan Shively (360) 891-5108

Action: Participate in Wind River Action Committee (aka "local watershed council").
Timeframe: Each fiscal year
Contact: Greg Cox

Phase 2 Actions

Action: Implement additional watershed restoration activities identified but not funded through flood repair or Jobs In The Woods allocations. If additional funding is

provided, several other watershed restoration needs would be implemented. Activities are similar to Phase 1 actions. Target sub-watersheds for treatment are also similar.
Timeframe: Fiscal years 1999 and 2000
Contact: Julie Knutson or Brian Bair

Action: Conduct comprehensive fish barrier assessment. Coordinate with state agencies conducting similar fish barrier assessments on non-Federal lands in the Wind River system. Prioritize sites for improvement and seek funding for improving high priority sites.
Timeframe: Fiscal year 1999 or 2000
Contact: Ken Wieman or Dan Shively (360) 891-5108

Action: Update and expand existing Geographic Information System (GIS) Stream Layer and associated databases. Coordinate with state, county, and local governments off-Forest to develop a compatible GIS stream layer and database for the entire Wind River system.
Timeframe: Fiscal year 1999 or 2000
Contact: Dan Shively (360) 891-5108

Tier 2

Washougal River (Tiers 2 and 3)

Ecology/EILS Program

Title: Stream temperature monitoring.
Description
Phase 1 Actions: Continuous temperature monitoring during summer low flows near the mouths of the Cowlitz, Kalama, and EF Lewis rivers.
Timeframe: FY98-03.
Phase 2 Actions: Continuous temperature monitoring during summer low flows at the same sites sampled during biodiversity/habitat monitoring (action ECY-202). Monitoring for long-term trends in stream temperature.
Timeframe: FY99 - Wind/Washougal basins; FY00 - Lewis/Kalama basins; FY01 - Toutle/Coweeman/Lower Cowlitz basins. After 3 years, assess whether to repeat this cycle in FY02-05, or complete coverage of LCSC area by sampling Upper Cowlitz basin in FY02 and Grays/Elochoman basins in FY03.
Cross-References: ECY-103, ECY-203.
Contact: Will Kendra (360) 407-6698.

Ecology/Water Quality Program

Phase 1 Actions

Action: Implementing the agency's watershed management approach to water quality will provide additional protection and enhancement of salmon bearing streams. The scoping process for this approach will begin in July 1998 as the first year of a five year process. Staff from the Vancouver Field Office will be identifying watershed partners and available information to incorporate into developing the framework for phase 2 actions. Staff will continue to provide technical assistance and educational programs as well as conduct compliance and enforcement actions. Timely review of SEPA documents, response to complaints and other permit mechanisms will help minimize new impacts to water quality affecting salmon and steelhead.
Timeframe: FY 98, and as needed FY 99, FY 2000-2001.
Cross-Reference: ECY-151.
Contact: Dave Howard, (360)690-4796.

Action: Washougal has adopted Ecology's "Stormwater Management Manual for the Puget Sound Basin" and implemented a public education program. Technical assistance from Ecology will be available to assist the City with staff training regarding use and enforcement of the Manual, as well as regarding adoption of maintenance and management ordinances.
Timeframe: FY 98, and as needed FY 99, FY 2000-20001.
Cross-Reference: ECY-151.
Contact: Gary Kruger (360)407-0238.

Phase 2 Actions

Action: Riparian zone and channel conditions, stream temperature and basin hydrology are significant concerns for restoration of steelhead in this basin. As with the EF Lewis River, Ecology's watershed assessment specialists will work with a multi-entity team to accomplish watershed assessment procedures throughout various land-uses. Components of watershed function needing protection or restoration will be identified. Work with local watershed parties will occur to discuss conditions and determine best methods for accomplishing steelhead/aquatic habitat protection and restoration objectives. Implementation plans and schedules will be developed. Staff will provide technical assistance for implementation measures as well as assist in locating appropriate funding sources. Monitoring of implementation efforts will occur to document success of measures and to guide adaptive management for future efforts. Work done should meet TMDL/OPC requirements to address CWA Section 303(d) current or future impairments.
Timeframe: FY 99 Initiate monitoring and collaborative basin work; FY 2000-2001 synthesize results, develop and begin implementation of watershed based protection and restoration measures; FY 2002-2003 implement and monitor effectiveness of measures.
Cross-References: ECY-254, ECY-252.
Contact: Dave Howard, (360)690-4796; Joanne Schuett-Hames, (360) 407-6296.

Ecology/Water Resources Program

Phase 1 Actions

Action: Watershed Assessment. Continue to support and provide technical assistance to Clark County and Clark Public Utilities in their efforts to monitor streams, collect data, and assess water availability in parts of WRIA 28 (Salmon Creek, Washougal River). Specific information is currently not readily available documenting the effect of existing water uses on the availability of water for salmonids in WRIA 28. The streams in the area are managed primarily to protect instream flows recommended by the Department of Fish and Wildlife. This level of effort is consistent with the currently planned resource deployment of one FTE to the Clark County area, located in Ecology's Vancouver office.
Timeframe: Would begin in 1998.
Cross-Reference: ECY-176.
Contact: Michael Harris (360) 407-6389.

Phase 2 Actions

Action: Withhold Action on Water Rights. During the process of determining and adopting instream flows, it will be necessary to withhold action on pending and new water right applications until instream flows are determined. We would withhold action on water rights in Wind, E.F. Lewis, Washougal, and Kalama River basins while the instream flow studies are being done by Ecology. Ecology can formally withdraw a water body from appropriation by rule if it will require a year or more to determine or adopt instream flows, or if it will require less than one year, Ecology can informally withhold action on water right applications. Implementation depends upon Ecology receiving its agency supplemental budget request and additional supplemental request specific to the LCSCI area.
Timeframe: Would begin in 1998 and continue until instream flows are determined.
Cross-Reference: ECY-278.
Contact: Ken Slattery, 360 407-6603

Action: Determine Instream Flows. Ecology will undertake Instream Flow Incremental Methodology (IFIM) studies on the Wind, Kalama, E.F. Lewis, and Washougal Rivers to assess the fish habitat and provide the information needed to set minimum instream flows by rule. Setting an instream flow will give a water right to the fish and protect them from future water withdrawals. Implementation depends upon Ecology receiving its agency supplemental budget request and additional supplemental request specific to the LCSCI area.
Timeframe: Scoping for study design will be done by April, 1998. Field measurements will be taken May through September, 1998. Computer models will be constructed and calibrated during Fall of 1998. This will require headquarters policy staff and possibly regional staff for field data collection and computer calibration.
Cross-Reference: ECY-279.
Contact: Brad Caldwell (360) 407-6639

Action: Assuring Compliance. Regulate conditioned water rights when instream flows are not being met. Take enforcement action against illegal and excessive water diversions and withdrawals. Take relinquishment action against former water rights that have been unused for five or more years without good cause. We would begin with Salmon Creek, E.F. Lewis and Washougal rivers. Implementation depends upon Ecology receiving its agency supplemental budget request and additional supplemental request specific to LCSCI area.
Timeframe: Would begin in 1998.
Cross-Reference: ECY-283.
Contact: Michael Harris (360) 407-6389.

Action: Measuring Devices. Effective water management is not possible without the capability to measure the diversion and use of water. State law requires metering as a condition of all new surface water permits. Metering may be required by Ecology of existing water rights where the diversion is from waters in which salmonid stock status is depressed or critical as determined by the Department of Fish and Wildlife or where the volume diverted exceeds one cubic foot per second. Ecology now routinely requires metering on new water right permits but lacks sufficient resources to check on compliance, require reporting, store data in a usable and retrievable form, or to require the retrofitting of measuring devices and reporting by existing uses. We would begin these actions involving measuring devices with Salmon Creek, EF Lewis, and Washougal River basins. Implementation depends upon Ecology receiving its agency supplemental budget request and additional supplemental request specific to LCSCI area.
Timeframe: Would begin in 1998.
Cross-Reference: ECY-286.
Contact: Fred Rajala (360) 407-6634.

Department of Fish and Wildlife

Phase 2 Actions

Title: Washougal River Watershed Monitoring
Actions: Conduct baseline habitat status monitoring survey in the Washougal River watershed. Utilize the TFW monitoring protocols imbedded in the stratified random sampling design developed from the pilot study on Cedar Creek to begin trend assessment of fish habitat condition. Evaluate habitat above the Washougal River smolt trap to begin evaluation of watershed productivity relative to habitat condition. Monitoring would continue on a 5-year interval following this initial survey.
Timeframe: June 1 to November 31, 2001, and at 5-year intervals.
Cross-References: DFW-208, DFW IIIA3.
Contact: Greg Volkhardt (360) 902-2779

Action: Using additional staff to more clearly identify factors limiting the productivity of steelhead and other salmonid species in the Washougal River watershed, WDFW,

Ecology, and Conservation districts, will partner to assess habitat and water quality in a complete watershed analysis.
Timeframe: 1999 - 2001
Cross-Reference: DFW-201
Contact: Bryan Cowan (360) 906-6720

Action: With additional staff resources, and in cooperation with the USFS, landowners, volunteer restoration groups, and the conservation districts, WDFW will commit 0.5 FTE's toward habitat restoration in the Washougal Basin. WDFW contributions would include coordination with volunteer restoration groups, bioengineering, basin-wide assessments, planning, priority setting, and ecosystem perspectives, as part of action item DFW-204. Restoration activities would begin on "hot spots" within the basin (those areas obviously needing repair without assessments) and, therefore, could begin when funding is secured. As watershed analyses are complete, restoration activities will follow priorities determined there.
Timeframe: FY 99 - 2005
Cross-Reference: DFW-204
Contact: Bryan Cowan (360) 906-6720

Clark County Commission

Phase 1 Actions

Action: The following Local Government Conservation Actions are pertinent to the Washougal River area with regards to development;

- Habitat Conservation Ordinance (CCC-101)
- Wetlands Protection Ordinance (CCC-102) follows the Puget Sound Manual
- Stormwater Control Ordinance (CCC-103)
- Erosion Control Ordinance (CCC-104)
- Geological Hazardous Ordinance (CCC-106)
- Critical Aquifer Recharge (CCC-107)
- Columbia Gorge Scenic Area Regulations (CCC-114)
- Conservation Futures Program (CCC-210)
- IAC Grants for Acquistion (VCP-104)

The items referenced above are the key ordinances/work towards protecting the Washougal River. All the regulations identified above have been on the books for less than two years except for the Wetlands Ordinance which came into effect in 1993. These are therefore, Phase 1 actions.
Contact: Jerri Bohard (360) 699-2375

Skamania County Planning and Community Development

Title: West End Water Quality Study

Description: Because of the growth occurring in Clark County, the west end of Skamania County, has seen a dramatic increase in development pressure. Most residents of the west end use individual withdrawals of surface and ground water to supply their homes and rely on septic systems. Many Skamania County residents were concerned that with increased development, water quality may be affected and expressed strong need that a study on water quality and quantity by conducted. The west end of Skamania County is the drainage basin for the Washougal River. The Washougal River and its tributaries are important spawning grounds for coho and Chinook Salmon and wild steelhead among other aquatic species. In the past years, declines in the above fish populations have also caused the need to look at the quality and quantity of water resources in the Washougal River basin.

Phase 1 Actions

Develop a database to store water resource and water quality data for future assessments and resource management decisions,
Characterize water resource conditions within the watershed relative to water quality criteria and critical indicators of resource availability,
Establish a monitoring network for assessing trends in quality and quantity parameters over time, and
Establish empirical understandings from which growth regulations, land use and future development planning will be guided.
Timeframe: The West End Water Quality Study was completed in September of 1997 with additional money being applied for in the future in order to monitor the water quality and quantities.

Phase 2 Actions

Form a Watershed Council for the Upper Washougal in a joint effort with Clark County and residents of both Skamania County and Clark County to focus on Conservation and restoration factors relating to the decline of the wild steelhead.
Apply for additional money in order to be able to adequately monitor water quality.
Timeframe: Beginning in the summer of 1998, Skamania County, in a joint effort with Clark County, will be organizing an Upper Washougal River Watershed Council with residents of Clark and Skamania Counties. Also in the Spring and Summer of 1998, Skamania County will begin to actively seek money to be able to use the monitoring system set up by the water study.
Contact: Skamania County Planning and Community Development (509) 427-9458

East Fork Lewis River (Tiers 2 and 3)

Ecology/EILS Program

Title: Ambient Monitoring.
Description
Phase 1 Actions: Monthly water quality monitoring near mouths of Cowlitz, Kalama, and EF Lewis rivers (core stations). Additional stations may be added in the LCSC area, subject to prioritization in FY99. Parameters sampled include temperature, pH, oxygen, suspended solids, and nutrients.
Timeframe: FY98-03 (core stations); FY-00 (additional stations, if any).
Cross-Reference: ECY-101.
Contact: Will Kendra (360) 407-6698.

Title: Stream temperature monitoring.
Description:
Phase 1 Actions: Continuous temperature monitoring during summer low flows near the mouths of the Cowlitz, Kalama, and EF Lewis rivers.
Timeframe: FY98-03.
Phase 2 Actions: Continuous temperature monitoring during summer low flows at the same sites sampled during biodiversity/habitat monitoring (action ECY-202). Monitoring for long-term trends in stream temperature.
Timeframe: FY99 - Wind/Washougal basins; FY00 - Lewis/Kalama basins; FY01 - Toutle/Coweeman/Lower Cowlitz basins. After 3 years, assess whether to repeat this cycle in FY02-05, or complete coverage of LCSC area by sampling Upper Cowlitz basin in FY02 and Grays/Elochoman basins in FY03.
Cross-References: ECY-103, ECY-203.
Contact: Will Kendra (360) 407-6698.

Ecology/Water Quality Program

Phase 1 Actions

Action: Implementing the agency's watershed management approach to water quality will provide additional protection and enhancement for salmon and steelhead bearing streams. The scoping process for this approach will begin in July 1998 as the first year of a five year process. Staff from the Vancouver Field Office will be identifying watershed partners and available information to incorporate into developing the framework for phase 2 actions. Staff will continue to provide technical assistance and educational programs as well as conduct compliance and enforcement actions. Timely review of SEPA documents, response to complaints and other permit mechanisms will help minimize new impacts to water quality affecting salmon and steelhead.:
Timeframe: FY 98, and as needed FY 99, FY 2000-2001.
Cross-Reference: ECY-151**.**
Contact: Dave Howard, (360)690-4796.

Action: This watershed is in a phase I stormwater NPDES jurisdiction which is behind schedule. Technical assistance is available to La Center and Yacolt regarding

adopting and implementing a stormwater management plan. Ecology will contact these jurisdictions.
Timeframe: FY 98, and as needed FY 99, FY 2000-20001.
Cross-Reference: ECY-151.
Contact: Gary Kruger (360)407-0238.

Phase 2 Actions

Action: Work with landowners, interested parties and other agencies to implement a watershed based approach to physical/biological habitat assessment, protection and restoration. Utilize multi-entity teams to accomplish watershed assessment procedures that identify key components of watershed function needing protection or restoration. Work with local watershed parties to discuss conditions and determine best methods for accomplishing steelhead/aquatic habitat objectives. Develop implementation plans and schedules. Provide a process for monitoring implementation and success measures. Work done should meet TMDL/OPC requirements to address CWA Section 303(d) impairments.
Timeframe: FY 99 Initiate monitoring and collaborative basin work; FY 2000-2001 synthesize results, develop and begin implementation of watershed based protection and restoration measures; FY 2002-2003 implement and monitor effectiveness of measures**.**
Cross-Reference: ECY-252.
Contact: Joanne Schuett-Hames, (360)407-6296

Ecology/Water Resources Program

Phase 2 Actions

Action: Withhold Action on Water Rights. During the process of determining and adopting instream flows, it will be necessary to withhold action on pending and new water right applications until instream flows are determined. We would withhold action on water rights in Wind, EF Lewis, Washougal, and Kalama River basins while the instream flow studies are being done by Ecology. Ecology can formally withdraw a water body from appropriation by rule if it will require a year or more to determine or adopt instream flows, or if it will require less than one year, Ecology can informally withhold action on water right applications. Implementation depends upon Ecology receiving its agency supplemental budget request and additional supplemental request specific to LCSCI area.
Timeframe: Would begin in 1998 and continue until instream flows are determined.
Cross-Reference: ECY-278.
Contact: Ken Slattery, 360 407-6603

Action: Determine Instream Flows. Ecology will undertake Instream Flow Incremental Methodology (IFIM) studies on the Wind, Kalama, EF Lewis, and Washougal Rivers to assess the fish habitat and provide the information needed to set

minimum instream flows by rule. Setting an instream flow will give a water right to the fish and protect them from future water withdrawals. Implementation depends upon Ecology receiving its agency supplemental budget request and additional supplemental request specific to the LCSCI area.
Timeframe: Scoping for study design will be done by April, 1998. Field measurements will be taken May through September, 1998. Computer models will be constructed and calibrated during Fall of 1998. This will require headquarters policy staff and possibly regional staff for field data collection and computer calibration.
Cross-Reference: ECY-279.
Contact: Brad Caldwell (360) 407-6639

Action: Adopt Instream Flows. Adopt instream flows and/or stream closures by administrative rule through a public process in connection with a local watershed plan, if any, or if no such plan is under development, on Ecology's own initiative. This will be done starting with the Salmon Creek and E.F. Lewis basins. The rule may also need to address the control of new wells exempt from permitting requirements where such wells would be withdrawing water in significant hydraulic continuity with a stream or other protected surface water body. Implementation depends upon Ecology receiving its agency supplemental budget request and additional supplemental request specific to the LCSCI area.
Timeframe: Would begin in 1998. The rule adoption process will likely take 24 months.
Cross-Reference: ECY-280.
Contact: Ken Slattery (360) 407-6603

Action: Assuring Compliance. Regulate conditioned water rights when instream flows are not being met. Take enforcement action against illegal and excessive water diversions and withdrawals. Take relinquishment action against former water rights that have been unused for five or more years without good cause. We would begin with basins Salmon Creek, EF Lewis, and Washougal River. Implementation depends upon Ecology receiving its agency supplemental budget request and additional supplemental request specific to the LCSCI area.
Timeframe: Would begin in 1998.
Cross-Reference: ECY-283.
Contact: Michael Harris (360) 407-6389.

Action: Measuring Devices. Effective water management is not possible without the capability to measure the diversion and use of water. State law requires metering as a condition of all new surface water permits. Metering may be required by Ecology of existing water rights where the diversion is from waters in which salmonid stock status is depressed or critical as determined by the Department of Fish and Wildlife or where the volume diverted exceeds one cubic foot per second. Ecology now routinely requires metering on new water right permits but lacks sufficient resources to check on compliance, require reporting, store data in a usable and retrievable form, or to require the retrofitting of measuring devices and reporting by existing uses. We would

begin these actions involving measuring devices with Salmon Creek, EF Lewis, and Washougal River basins. Implementation depends upon Ecology receiving its agency supplemental budget request and additional supplemental request specific to the LCSCI area.
Timeframe: Would begin in 1998.
Cross-Reference: ECY-286.
Contact: Fred Rajala (360) 407-6634.

Department of Fish and Wildlife

Phase 1 Actions

Action: WDFW will work cooperatively with Ecology, Clark County, the city of La Center, and local landowners to determine where levees can be removed or set back away from the active channel to increase riparian habitat and increase floodplain interaction.
Timeframe: FY 98 - 99
Cross-Reference: DFW-112
Contact: Bryan Cowan (360) 906-6720, Millard Deusen (360) 902-2562

Action: WDFW will work closely with Clark county and other jurisdictions to continue to support the current gravel mining moratorium within county floodplains.
Timeframe: Immediately
Cross-Reference: DFW-113
Contact: Bryan Cowan (360) 906-6720, Millard Deusen (360) 902-2562

Action: WDFW and WDOT have assembled a comprehensive database on fish passage problems in the East Fork Lewis River watershed. Efforts to replace faulty culverts is actively underway with coordination from volunteer restoration groups, local governments, and landowners. WDFW will commit FTEs as described in action item DFW-106 to advance the rate of culvert replacement in the East Fork using priorities established by WDFW and WDOT.
Timeframe: FY 98 - 2000
Cross-Reference: DFW-106
Contact: Bryan Cowan (360) 906-6720

Action: WDFW will coordinate with active volunteer restoration groups, landowners, Conservation Districts, Clark PUD, and Clark County to initiate restoration of degraded and denuded stream banks in the East Fork watershed. Upon completion of watershed analyses, WDFW will coordinate with the above groups to prioritize and initiate in-stream restoration activities. Using existing staff, WDFW will commit 0.5 FTEs to restoration activities (including culvert replacement) on the East Fork Lewis River as part action item DFW-106.
Timeframe: FY 98 - 2000
Cross-Reference: DFW-106

Contact: Bryan Cowan (360) 906-6720

Phase 2 Actions

Action: Using additional staff to more clearly identify factors limiting the productivity of steelhead and other salmonid species in the East Fork Lewis River watershed, WDFW, Ecology, Conservation districts, and the USFS will partner to assess habitat and water quality in a complete watershed analysis.
Timeframe: 1998 - 2000
Cross-Reference: DFW-201
Contact: Bryan Cowan (360) 906-6720

Action: With additional staff resources, and in cooperation with the USFS, landowners, volunteer restoration groups, and the conservation districts, WDFW will commit 0.5 FTEs toward habitat restoration in the East Fork Lewis River Basin. WDFW contributions would include coordination with volunteer restoration groups, bioengineering, basin-wide assessments, planning, priority setting, and ecosystem perspectives, as part of action item DFW-204. Restoration activities would begin on "hot spots" within the basin (those areas obviously needing repair without assessments) and, therefore, could begin when funding is secured. As watershed analyses are complete, restoration activities will follow priorities determined there.
Timeframe: FY 99 - 2005
Cross-Reference: DFW-204
Contact: Bryan Cowan (360) 906-6720

Clark County Commission

Phase 1 Actions

Action: The following Local Government Conservation Actions are pertinent to the East Fork Lewis River area with regards to development;

- Habitat Conservation Ordinance (CCC-101)
- Wetlands Protection Ordinance (CCC-102) follows the Puget Sound Manual
- Stormwater Control Ordinance (CCC-103)
- Erosion Control Ordinance (CCC-104)
- Geological Hazardous Ordinance (CCC-106)
- Critical Aquifer Recharge (CCC-107)
- Comprehensive Plan Policy which prohibits mining in the floodplain (CCC-111)
- Conservation Futures Program (CCC-210)
- IAC Grants for Acquisition (VCP-104)
- East Fork Lewis River project (CCC-208) this is both a Phase I and Phase II endeavor
- Projects by Fish First and Habitat Partners
- Environmental Enhancement Group which is rehabilitating mining lands along the

East Fork

The items referenced above are the key ordinances/ work towards protecting the East Fork Lewis River. All the regulations identified above have been on the books for less than two years except for the Wetlands Ordinance which came into effect in 1993. These are, therefore, Phase 1 actions.

Contact: Jerri Bohard (360) 699-2375

Action: Road Barrier Improvements

Study and prioritization of stream crossings at county roads for fish passage.

Fish Passage Improvements 1997

Lockwood Cr. @ Lockwood Cr. Rd	$56,600
Mill Cr. @ N.E. 259th St.	$62,400
Riley Cr. @ N.E. Johnson Rd.	$45,900

Contact: Jerri Bohard (360) 699-2375

US Forest Service

Phase 1 Actions

Action: Implement watershed restoration activities funded through flood repair and Job In The Woods appropriations. Target areas include mainstem East Fork Lewis (Sunset Falls to Green Fork), Green Fork, and Slide Creek. Primary restoration activities include road decommissioning; riparian planting and thinning; and stream bank stabilization; and stream habitat improvements.
Timeframe: In progress; 1998 through 1999.
Contact: Debbie Hollen or Alex Foster

Action: Conduct collaborative monitoring and evaluation activities with WDFW. Continue to estimate annual adult steelhead returns to the East Fork Lewis River.
Timeframe: In progress; conducted on an annual basis contingent on annual budgets.
Contact: Deborah Haapala

Action: Stream habitat inventories. The U.S. Forest Service surveys approximately 5-10 miles of anadromous fish-bearing streams each year on the Central Skill Center. The Central Skill Center encompasses not only the East Fork Lewis River, but also the North Fork Lewis River and other drainages on the Mount St. Helens National Volcanic Monument. Information on habitat quality and riparian condition are collected. Data are stored in a Forest Service database system compatible for Geographic Information System programs.
Timeframe: July through September; each year.
Contact: Deborah Haapala

Action: Conduct water quality monitoring at several established stations on federal lands throughout the Central Skill Center. Primary emphasis is on collection of continuous low-flow water temperature data.
Timeframe: June through September; each year contingent on annual budget.
Contact: Mark Krieter

Action: Conduct implementation and effectiveness monitoring of land management activities (i.e., road construction, timber harvest operations, watershed restoration projects, etc.). Evaluate the implementation and effectiveness of water quality Best Management Practices (BMPs) each year as part of the Forest's annual Forest Plan monitoring requirements. Results are published each year in the Gifford Pinchot National Forest's Annual Monitoring Report.
Timeframe: March through September; each fiscal year (final reports usually available by spring of the following year).
Contact: John Rollin or Dan Shively (360) 891-5108

Phase 2 Actions

Action: Implement additional watershed restoration activities identified but not funded through flood repair or Jobs In The Woods allocations. If additional funding is provided, several other watershed restoration needs would be implemented.
Timeframe: Fiscal years 1999 and 2000
Contact: Debbie Hollen or Mark Krieter

Action: Monitor steelhead smolt production in cooperation with WDFW. Establish smolt trap sites both on-Forest (near Sunset Falls) and off-Forest (near Lewisville Park).
Timeframe: Spring 1998; contingent on funding request submitted.
Contact: Deborah Haapala

Action: Conduct comprehensive fish barrier assessment. Coordinate with state agencies conducting similar fish barrier assessments on non-Federal lands in the East Fork Lewis system. Prioritize sites for improvement and seek funding for improving high priority sites.
Timeframe: Fiscal year 1999 or 2000
Contact: Dan Shively (360) 891-5108

Action: Update and expand existing Geographic Information System (GIS) Stream Layer and associated databases. Coordinate with state, county, and local governments off-Forest to develop a compatible GIS stream layer and database for the entire East Fork Lewis River system.
Timeframe: Fiscal year 1999 or 2000
Contact: Dan Shively (360) 891-5108

Tier 3

Coweeman River (Tier 3)

Ecology/EILS Program

Title: Stream temperature monitoring.
Description
Phase 1 Actions: Continuous temperature monitoring during summer low flows near the mouths of the Cowlitz, Kalama, and EF Lewis rivers.
Timeframe: FY98-03.
Phase 2 Actions: Continuous temperature monitoring during summer low flows at the same sites sampled during biodiversity/habitat monitoring (action ECY-202). Monitoring for long-term trends in stream temperature.
Timeframe: FY99 - Wind/Washougal basins; FY00 - Lewis/Kalama basins; FY01 - Toutle/Coweeman/Lower Cowlitz basins. After 3 years, assess whether to repeat this cycle in FY02-05, or complete coverage of LCSC area by sampling Upper Cowlitz basin in FY02 and Grays/Elochoman basins in FY03.
Cross-References: ECY-103, ECY-203.
Contact: Will Kendra (360) 407-6698.

Ecology/Water Quality Program

Phase 1 Actions

Actions: Ecology, Southwest Regional Office, Water Quality Program, (SWRO), has planned the following actions in the Lower Columbia Basin which are applicable Phase 1, Tier 3, 4, & 5 activities associated with the Lower Columbia Steelhead Conservation Initiative:

- Provide technical assistance at the local levels of government, e.g., public works, health, and planning departments;
- Work with local conservation districts regarding concentrated animal feeding operations;
- Complaint follow-up and permit compliance associated primarily with:
  - stormwater runoff
  - soil erosion
  - agriculture runoff
  - construction sites
  - lake management
  - unpermitted discharges
- Internal cross program coordination/communication within Ecology, SWRO.

In addition, cities and counties will be contacted regarding adopting and implementing a stormwater management program.
Timeframe: FY 98 and as needed FY 99, FY 2000-20001.

Cross-Reference: ECY-151.
Contact: Dave Howard, (360)690-4796 and for stormwater, Gary Kruger (360)407-0238.

Phase 2 Actions

Actions: Actions similar to those planned for the Tier 1 and 2 watersheds are known additionally to be important to these watersheds. A number of the watersheds are currently water quality impaired and on the CWA Section 303(d) list. At this time, no specific timeframes or actions are planned. Coordinated development of a monitoring plan in the Coweeman watershed analysis area, and road surveys and temperature/fish habitat monitoring in the Grays, Elochoman, Abernathy and Germany watersheds are identified Ecology priorities. As Tier 1 and 2 watershed actions are accomplished, work in these areas will be initiated.
Contact: Dave Howard (360) 690-4796; Joanne Schuett-Hames (360) 407-6296.

Department of Fish and Wildlife

Title: TFW Pilot Effectiveness Monitoring Project - Upper Coweeman LWD Baseline Study
Phase 1 Actions: Conduct a large woody debris assessment in the Upper Coweeman Watershed Administrative Unit to provide a baseline to assess watershed analysis-based timberland management effects on LWD levels. A stratified random sampling design will be used to subsample fish-bearing segments in the Upper Coweeman WAU. The TFW Monitoring Level 1 LWD survey protocol will be used to collect LWD stocking levels and volumes within the WAU. This project is jointly funded by the Washington Department of Fish and Wildlife, Weyerhaeuser, and by a Centennial Clean Water Fund grant administered by the Northwest Indian Fisheries Commission and the TFW Monitoring Steering Committee.
Phase 2 Actions: Repeat survey in 2002 to provide a basis for assessing LWD effectiveness in maintaining or increasing LWD stocking levels and volumes in the WAU. These results will be used in the assessment of the Upper Coweeman Watershed Analysis prescriptions during its five year review.
Timeframe: 1998 and 2002.
Cross-Reference: DFW-208
Contact: Greg Volkhardt (360) 902-2779

Phase 2 Action

Action: Conduct a pilot habitat status monitoring survey in the Coweeman River watershed. Utilize the TFW monitoring protocols imbedded in the stratified random sampling design to develop sampling rates appropriate for evaluating and monitoring habitat condition at the watershed scale. Results from this study will be used to develop the long-term habitat status monitoring protocols necessary to assess watershed restoration and to evaluate the effect of habitat condition and change on

smolt production. Monitoring would continue on a 5-year interval following this initial survey.
Timeframe: June 1 to November 31, 1998.
Cross-Reference: DFW-208
Contact: Greg Volkhardt (360) 902-2779

Cowlitz and Wahkiakum Conservation Districts

Phase 2 Actions

Title: Watershed Planning and Implementation Projects
Description: Cowlitz and Wahkiakum Conservation Districts intend to continue what we feel is a highly successful approach to watershed management at the local level. Prior to the steelhead listing, the districts had prioritized watersheds within the two counties based on available information including WDFW SASSI report, DOE-303(d) list, local knowledge, and, often overlooked, public interest. This priority list was used through the displaced fisher program for stream habitat survey data collection. The priority list and availability of habitat survey is currently directing our efforts toward the Abernathy Creek, Mill Creek, and Germany Creek Watersheds. We also recognize the opportunity to build upon the watershed analysis completed by Weyerhaeuser for the Upper Coweeman by working with the local community in the Lower Coweeman WAU.
Contact: Darin Houpt, (360)425-1880

Title: Stream Habitat Survey and Habitat Restoration
Description: Cowlitz and Wahkiakum Conservation Districts have submitted a proposal to Department of Natural Resources and Department of Fish and Wildlife's Jobs for the Environment program. There are two key elements to our proposal. First, we intend to continue the stream survey work started under the Displaced fisher program and collect stream habitat data for the Mill Creek (tier 5), Ostrander Creek, Coweeman River (tier 3), and Kalama River (tier 1) watersheds. Second we intend to continue implementing best management practices based on the data collected. Emphasis for implementing practices will be placed in watershed that have watershed plans or are in the process of plan development.
Contact: Darin Houpt, (360)425-1880

Grays River

Ecology/EILS Program

Title: Stream temperature monitoring.
Description:
Phase 1 Actions: Continuous temperature monitoring during summer low flows near the mouths of the Cowlitz, Kalama, and EF Lewis rivers.

Timeframe: FY98-03.
Phase 2 Actions: Continuous temperature monitoring during summer low flows at the same sites sampled during biodiversity/habitat monitoring (action ECY-202). Monitoring for long-term trends in stream temperature.
Timeframe: FY99 - Wind/Washougal basins; FY00 - Lewis/Kalama basins; FY01 - Toutle/Coweeman/Lower Cowlitz basins. After 3 years, assess whether to repeat this cycle in FY02-05, or complete coverage of LCSC area by sampling Upper Cowlitz basin in FY02 and Grays/Elochoman basins in FY03.
Cross-References: ECY-103, ECY-203.
Contact: Will Kendra (360) 407-6698.

Ecology/Water Quality Program

Phase 1 Actions

Actions: Ecology, Southwest Regional Office, Water Quality Program, (SWRO), has planned the following actions in the Lower Columbia Basin which are applicable Phase 1, tier 3, 4, & 5 activities associated with the Lower Columbia Steelhead Conservation Initiative:

- Provide technical assistance at the local levels of government, e.g., public works, health, and planning departments;
- Work with local conservation districts regarding concentrated animal feeding operations;
- Complaint follow-up and permit compliance associated primarily with:
  - stormwater runoff
  - soil erosion
  - agriculture runoff
  - construction sites
  - lake management
  - unpermitted discharges
- Internal cross program coordination/communication within Ecology, SWRO.

In addition, cities and counties will be contacted regarding adopting and implementing a stormwater management program.
Timeframe: FY 98 and as needed FY 99, FY 2000-20001.
Cross-Reference: ECY-151.
Contact: Dave Howard, (360)690-4796 and for stormwater, Gary Kruger (360)407-0238.

Phase 2 Actions

Actions: Actions similar to those planned for the Tier 1 and 2 watersheds are known additionally to be important to these watersheds. A number of the watersheds are currently water quality impaired and on the CWA Section 303(d) list. At this time, no specific timeframes or actions are planned. Coordinated development of a monitoring plan in the Coweeman watershed analysis area, and road surveys and temperature/fish

habitat monitoring in the Grays, Elochoman, Abernathy and Germany watersheds are identified Ecology priorities. As Tier 1 and 2 watershed actions are accomplished, work in these areas will be initiated.
Contact: Dave Howard (360) 690-4796; Joanne Schuett-Hames (360) 407-6296.

Department of Fish and Wildlife

Phase 2

Title: Grays River Watershed Monitoring
Actions: Conduct baseline habitat status monitoring survey in the Grays River watershed. Utilize the TFW monitoring protocols imbedded in the stratified random sampling design developed from the pilot study on Cedar Creek to begin trend assessment of fish habitat condition. Evaluate habitat above the Grays River smolt trap to begin evaluation of watershed productivity relative to habitat condition. Monitoring would continue on a 5-year interval following this initial survey.
Timeframe: June 1 to November 31, 2002, and at 5-year intervals.
Cross-References: DFW-208, DFW IIIA3.
Contact: Greg Volkhardt (360) 902-2779

Cowlitz and Wahkiakum Conservation Districts

Phase 1

Title: Displaced Fisher Stream Habitat Surveys (2-year program in Wahkiakum County and 1-year program in Cowlitz Co.)
Description: Through the Displaced Fisher Program in Cowlitz and Wahkiakum Counties emphasis was placed on collecting stream habitat survey data. The data consisted of collecting information pertaining to fish passage issues, physical characteristics of the channel, channel stability, riparian condition, fish habitat unit stratification, large woody debris, and upslope activities leading to stream degradation. The data was entered and is being managed in a MS Access database. The information was used to identify restoration opportunities for which the Fisher program could provide implementation assistance. Through the program stream data was collected for the Grays River (tier 3), Deep River, Jim Crow Creek, Skamokawa Creek (tier 4), and Elochoman River (tier 5) watersheds in Wahkiakum County. In Cowlitz County data was collected for the Germany Creek (tier 5) and Abernathy Creek (tier 4) watersheds. Best management practices implemented through this program include; development of 5 farm conservation plans, 82,618 feet of riparian fencing, 1,221,103 feet of fish bearing water surveyed, placement of 29 large woody debris instream structures (4,000 feet of stream), 180 feet of spawning gravel placement, 1 debris jam removal, 4,500 trees planted in riparian zones and for erosion control, conducted spawner surveys on 53 streams (402,599 feet of stream). Funding for the program was not re-authorized and the field portion of the program ended in December 1997.

Contact: Darin Houpt, (360)425-1880 or (360) 795-8240

Wahkiakum Conservation District

Phase 1 Actions

Title: Grays River Watershed Planning and Implementation Project
Description: Wahkiakum Conservation District is currently assisting the Grays River watershed community address their watershed issues and concerns. The project relies on a consensus building approach toward the development and implementation of a watershed plan. A consensus group made up of watershed landowners, land managers, local government, and interest groups provide the decision making body for the project. Natural resource agencies are partnering in the approach to assist the consensus group assess resource conditions and make decisions based on sound science. The watershed communities issues and concerns focus on flooding, fisheries and water quality. The District has assisted the community identify their issues and concerns, compiled available information to convey historic and current conditions, and has begun field assessments in the watershed. Stream surveys have been completed on all the anadromous fish bearing water in the watershed. The survey includes identification of fish passage issues, physical characteristics of the stream, riparian conditions, fish habitat, large woody debris, channel stability conditions, and non point sources from upslope activities. Road and mass wasting assessments have been completed for two-thirds of the watershed. The road assessment is a survey of the entire road network including the traveled surface, cut and fill slopes, and culvert installations based on hydrologic segments. The mass wasting assessment includes a remote sensing review of past and present mass wasting features and a field survey of existing conditions. Additional assessment work will include forest management activities, agriculture management activities, surface erosion, and hydrology. Implementation activities have been ongoing as the field work progresses.
Contact: Darin Houpt, (360) 425-1880 or (360) 795-8240

Phase 2 Actions

Title: Grays River Watershed Plan Implementation
Description: Following the development of the Grays River watershed management plans as identified under Phase 1, the district intends to apply for funding to help the community implement their plan. The purpose of the plan is to develop site specific needs in the watershed, prioritize the needs, and develop the strategy to implement practices that will address the communities issues and concerns. Examples of practices based on current available information for the watershed include; correcting fish passage issues, improving riparian condition, critical area seeding (erosion control), instream structures to add to channel complexity and provide habitat, stream bank stabilization, improved road drainage, road abandonment, improved pasture

management, riparian fencing, alternative livestock watering, and improved forest practices.
Contact: Darin Houpt, (360)425-1880 or (360) 795-8240

North Fork Lewis River (Tiers 3 and 4)

Department of Fish and Wildlife

Title: Watershed Monitoring Pilot Study and Baseline Data Collection
Phase 2 Action
Action: Conduct a pilot habitat status monitoring survey in the Cedar Creek sub-basin of the North Fork Lewis River. Utilize the TFW monitoring protocols imbedded in the stratified random sampling design to develop sampling rates appropriate for evaluating and monitoring habitat condition at the watershed scale. Results from this study will be used to develop the long-term habitat status monitoring protocols necessary to assess watershed restoration and to evaluate the effect of habitat condition and change on smolt production. This study would also begin long term status monitoring on Cedar Creek to assess habitat condition concurrent with smolt monitoring in the Cedar Creek sub-basin to quantify habitat effects on freshwater smolt production. Monitoring would continue on a 5-year interval following this initial survey.
Timeframe: June 1 to November 31, 1998.
Cross-Reference: DFW-208,
Contact: Greg Volkhardt (360) 902-2779

Clark County Commission

Phase 1

Action: Road Barrier Improvements
Study and prioritization of stream crossings at County roads for fish passage.

Fish Passage Improvements 1997

Cedar Cr. Tributary @ Cedar Cr. Rd.	$56,600

Phase 2

Proposed Activities 1998
Fish Passage Enhancements

Cedar Cr. @ Chelatchie Railroad	$485,000
Cedar Cr. @ Amboy Rd.	$60,000

Contact: Jerri Bohard (360) 699-2375

Tier 4

Salmon Creek (Tier 4)

Ecology/Water Resources Program

Phase 1 Actions

Action: Watershed Assessment. Continue to support and provide technical assistance to Clark County and Clark Public Utilities in their efforts to monitor streams, collect data, and assess water availability in parts of WRIA 28 (Salmon Creek, Washougal River). Specific information is currently not readily available documenting the effect of existing water uses on the availability of water for salmonids in WRIA 28. The streams in the area are managed primarily to protect instream flows recommended by the Department of Fish and Wildlife. This level of effort is consistent with the currently planned resource deployment of one FTE to the Clark County area, located in Ecology's Vancouver office.
Timeframe: Would begin in 1998.
Cross-Reference: ECY-176.
Contact: Michael Harris (360) 407-6389.

Phase 2 Actions

Action: Adopt Instream Flows. Adopt instream flows and/or stream closures by administrative rule through a public process in connection with a local watershed plan, if any, or if no such plan is under development, on Ecology's own initiative. This will be done starting with the Salmon Creek and E.F. Lewis basins. The rule may also need to address the control of new wells exempt from permitting requirements where such wells would be withdrawing water in significant hydraulic continuity with a stream or other protected surface water body. Implementation depends upon Ecology receiving its agency supplemental budget request and additional supplemental request specific to the LCSCI area.
Timeframe: Would begin in 1998. The rule adoption process will likely take 24 months.
Cross-Reference: ECY-280.
Contact: Ken Slattery (360) 407-6603

Action: Assuring Compliance. Regulate conditioned water rights when instream flows are not being met. Take enforcement action against illegal and excessive water diversions and withdrawals. Take relinquishment action against former water rights that have been unused for five or more years without good cause. We would begin with basins Salmon Creek, E.F. Lewis, and Washougal River. Implementation depends upon Ecology receiving its agency supplemental budget request and additional supplemental request specific to the LCSCI area.
Timeframe: Would begin in 1998.
Cross-Reference: ECY-283.

Contact: Michael Harris (360) 407-6389.

Action: Measuring Devices. Effective water management is not possible without the capability to measure the diversion and use of water. State law requires metering as a condition of all new surface water permits. Metering may be required by Ecology of existing water rights where the diversion is from waters in which salmonid stock status is depressed or critical as determined by the Department of Fish and Wildlife or where the volume diverted exceeds one cubic foot per second. Ecology now routinely requires metering on new water right permits but lacks sufficient resources to check on compliance, require reporting, store data in a usable and retrievable form, or to require the retrofitting of measuring devices and reporting by existing uses. We would begin these actions involving measuring devices with Salmon Creek, EF Lewis, and Washougal River basins. Implementation depends upon Ecology receiving its agency supplemental budget request and additional supplemental request specific to the LCSCI area.
Timeframe: Would begin in 1998.
Cross-Reference: ECY-286.
Contact: Fred Rajala (360) 407-6634.

Clark County Commission

Phase 1

Action: Road Barrier Improvements
Study and prioritization of stream crossings at County roads for fish passage.

Fish Passage Improvements 1997

Morgan Cr. @ N.E. 174th St.	$45,700

Phase 2

Proposed Activities 1998
Fish Passage Enhancements

Salmon Cr. @ Hwy 99	$150-200,000

Contact: Jerri Bohard (360) 699-2375

Cowlitz River (Tier 4)

Ecology/EILS Program

Title: Ambient Monitoring.
Description

Phase 1 Actions: Monthly water quality monitoring near mouths of Cowlitz, Kalama, and EF Lewis rivers (core stations). Additional stations may be added in the LCSC area, subject to prioritization in FY99. Parameters sampled include temperature, pH, oxygen, suspended solids, and nutrients.
Timeframe: FY98-03 (core stations); FY-00 (additional stations, if any).
Cross-Reference: ECY-101.
Contact: Will Kendra (360) 407-6698.

Title: Stream temperature monitoring.
Description
Phase 1 Actions: Continuous temperature monitoring during summer low flows near the mouths of the Cowlitz, Kalama, and EF Lewis rivers.
Timeframe: FY98-03.
Phase 2 Actions: Continuous temperature monitoring during summer low flows at the same sites sampled during biodiversity/habitat monitoring (action ECY-202). Monitoring for long-term trends in stream temperature.
Timeframe: FY99 - Wind/Washougal basins; FY00 - Lewis/Kalama basins; FY01 - Toutle/Coweeman/Lower Cowlitz basins. After 3 years, assess whether to repeat this cycle in FY02-05, or complete coverage of LCSC area by sampling Upper Cowlitz basin in FY02 and Grays/Elochoman basins in FY03.
Cross-References: ECY-103, ECY-203.
Contact: Will Kendra (360) 407-6698.

Lewis County Commission

Phase 1 Actions

Agency: Lewis County Commissioners; Lewis County Public Services (Community Development and Public Works)
Title: GMA Critical Areas Ordinance and Comprehensive Land Use Plan
Description: The Lewis County Planning Division adopted their GMA Critical Areas Ordinance in June of 1996. This ordinance is the county's first step in the GMA planning process. The ordinance regulates development activities within or near wetlands, streams, frequently flooded areas and sensitive fish and wildlife habitat. Through the local review process any impacts shall be mitigated for a no net-loss of habitat. The County has also begun the GMA Comprehensive Land-Use planning process and the Cowlitz River watershed will be a sub-area element of this plan. This process is intended to designate development densities and standards for both urban and rural areas. The goal is to improve the natural resource land management within the county and to regulate future development in a responsible manner. These regulations are formulated with guidance from the Department of Community, Trade and Economic Development and the Department of Ecology. The comprehensive plan is scheduled to be completed by mid 1999.
Timeframe: Comprehensive Plan should be completed by end of FY 98-99 biennium.
Contact: Mike Zengel, Planning Manager (360) 740-1144.

Agency: Lewis County Commissioners; Lewis County Public Service (Community Development and Public Works)
Title: Amendment to the Shorelines Master Program
Description: The Lewis County Planning Division is currently in the process of amending their Critical Areas Ordinance language, for wetlands protection and mitigation, into their Shoreline Master Program. This will allow greater flexibility in requiring and implementing the proper mitigation to achieve a no net-loss in wetland protection. This action is being undertaken in coordination with the Washington State Department of Ecology.
Timeframe: Completed by mid 1998 (FY 98-99 biennium)
Contact: Marc Duboiski, Shorelines Administrator (360) 740-1487.

Agency: Lewis County Commissioners; Lewis County Public Service (Community Development and Public Works)
Title: Development of Stormwater Management Ordinance with Technical Manual
Description: The Lewis County Public Works Division is currently in the process of developing a stormwater management ordinance with technical manual to be adopted to assist in managing developments and road construction. This will allow greater flexibility in requiring and implementing the proper mitigation to limit the impacts of increased runoff from impervious surfaces to floodplains, wetlands and streams within the Cowlitz River watershed. This action is being undertaken in coordination with the Washington State Department of Ecology.
Timeframe: Should be completed by mid 1999 (FY 98-99 biennium).
Contact: Pete Ringen, County Engineer (360) 740-1123.

Agency: Lewis County Commissioners; Lewis County Public Service (Community Development and Public Works)
Title: Stream bank Stabilization Committee
Description: The Lewis County Planning Division conducts their stream bank stabilization program each spring and early summer of the year. This program is designed to educate and assist landowners on utilization of different bank protection techniques. Bioengineering techniques - bank barbs, large woody debris, bank sloping and revegetation (grasses, shrubs and trees) - are stressed over traditional riprap, dikes and revetments. This program is conducted jointly with representatives from the Washington Department of Fish & Wildlife, Washington Department of Ecology, Natural Resource Conservation Service and the Lewis County Public Works Division.
Timeframe: Each year.
Contact: Marc Duboiski, Shorelines Administrator (360) 740-1487 and Ed Oliphant, Special Projects Engineer (360) 740-1175.

Agency: Lewis County Commissioners; Lewis County Public Service (Community Development and Public Works)
Title: Preliminary Culvert Inventory for the Cowlitz River Watershed.

Description: The Lewis County Public Works Division and the Planning Division conducted a preliminary culvert inventory for both the Lower Cowlitz watershed (below dams) and the Upper Cowlitz watershed (above dams). This inventory, conducted by county staff, identified culvert barriers (perched culverts) on all type 3 and 4 streams along county roads. The county identified 22 culverts (16 in lower Cowlitz and 6 in upper Cowlitz) that are barriers to fish passage with a cost estimate of $1.5 million for full replacement. See Phase 2 actions for completing a more comprehensive inventory with WDFW.
Timeframe: Completed. Will work with WDFW to prioritize identified culverts (FY 98-99 biennium)
Contact: Marc Duboiski, Shorelines Administrator (360) 740-1487.

Agency: Lewis County Commissioners; Lewis County Public Services (Community Development and Public Works)
Title: Culvert Maintenance Program.
Description: The Lewis County Public Works Division conducts an annual culvert maintenance program for repairing, replacing and cleaning out all private and public culverts. This program's average annual expenditure within the Cowlitz River watershed is $72,000.
Timeframe: Annually.
Contact: Bill Forth, Road Superintendent (360) 740-1384.

Agency: Lewis County Commissioners; Lewis County Public Services (Community Development and Public Works)
Title: Culvert Replacement Program.
Description: The Lewis County Public Works Division replaces culverts for the purpose of improving fish passage within the Cowlitz River watershed. Over the last two years, this program's average annual expenditure is $73,000. The county has increased this annual expenditure for improving fish passage to $100,000.
Timeframe: Annually.
Contact: Bill Forth, Road Superintendent (360) 740-1384. Marc Duboiski, Shorelines Administrator (360) 740-1487.

Phase 2 Actions

Agency: Lewis County Public Services (Community Development and Public Works)
Title: Comprehensive Culvert Inventory
Description: A more comprehensive inventory with the Washington Department of Fish & Wildlife shall be completed with grant funds from the state. This inventory is intended to evaluate all culverts, their sizes, their installation, their gradient, the peak and off-peak stream velocities, the stream bedload, the upstream and downstream habitat value and the natural fish barriers. All identified problem areas shall be prioritized for implementation using a benefit/risk analysis. Multiple funding sources shall be sought out for full implementation.
Timeframe: FY 98-99 biennium.

Contact: Marc Duboiski, Shorelines Administrator (360) 740-1487.

Cowlitz Conservation District

Phase 1

Title: Arkansas Creek and Silver Lake Watershed Management Plan Implementation
Description: Cowlitz Conservation District assisted the Arkansas Creek and Silver Lake watershed communities develop watershed management plans. Arkansas Creek and Silver Lake watersheds are sub-watersheds within the Cowlitz River watershed and encompass forestry, rural, and urban land use. Plans were developed through a consensus building approach involving decision-makers in the watershed (landowners & land managers) as well as other interests including natural resource agencies, local government, and interest groups. The District has been assisting these watershed communities implement their plans as available resources allow. Examples of implemented practices include; correcting fish barriers, improved road drainage, road erosion control, fencing to manage livestock access to streams, improved pasture management, riparian restoration, stream bank stabilization, improved pasture management, septic system maintenance, and providing alternative livestock watering facilities. The expected results include improved management of natural resources and restoration of problem areas that will result in improved water quality and fisheries habitat.
Contact: Darin Houpt, (360)425-1880

US Forest Service

Phase 1 Actions

Action: Implement watershed restoration activities funded through flood repair and Job In The Woods appropriations. Target areas benefiting steelhead include: North Fork Cispus River, Iron Creek, and Yellowjacket Creek. Primary restoration activities include road decommissioning; riparian planting and thinning; and stream habitat improvements.
Timeframe: In progress; 1998 through 1999.
Contact: Terry Lawson or Mike Philbin

Action: Conduct collaborative monitoring and evaluation activities with Lewis County PUD, WDFW, and others. Continue efforts to monitor success of steelhead reintroduction program: redd surveys, habitat utilization surveys, etc. Existing efforts are quite limited (only 1-2 days per year).
Timeframe: In progress.
Contact: Ken Meyer

Action: Stream habitat inventories. The U.S. Forest Service surveys approximately 5-10 miles of anadromous fish-bearing streams each year on the North Skill Center. The North Skill Center primarily encompasses the upper Cowlitz River system and upper Nisqually River system. Information on habitat quality and riparian condition are collected. Data are stored in a Forest Service database system compatible for Geographic Information System programs.
Timeframe: July through September; each year.
Contact: Ken Meyer

Action: Conduct water quality monitoring at several established stations on federal lands throughout the North Skill Center. Primary emphasis is on collection of continuous low-flow water temperature data.
Timeframe: June through September; each year contingent on annual budget.
Contact: Mike Philbin

Action: Conduct implementation and effectiveness monitoring of land management activities (i.e., road construction, timber harvest operations, watershed restoration projects, etc.). Evaluate the implementation and effectiveness of water quality Best Management Practices (BMPs) each year as part of the Forest's annual Forest Plan monitoring requirements. Results are published each year in the Gifford Pinchot National Forest's Annual Monitoring Report.
Timeframe: March through September; each fiscal year (final reports usually available by spring of the following year).
Contact: John Rollin or Dan Shively (360) 891-5108

Phase 2 Actions

Action: Implement additional watershed restoration activities identified but not funded through flood repair or Jobs In The Woods allocations. If additional funding is provided, several other watershed restoration needs would be implemented.
Timeframe: Fiscal years 1999 and 2000
Contact: Mike Philbin or John Gier

Action: Expand existing efforts to collaboratively monitor success of steelhead reintroduction program. The Forest Service would participate with Lewis County PUD, WDFW, and others to:

- Evaluate smolt production in the upper Cowlitz River system,
- Determine habitat use and primary areas of juvenile fish occupancy, and
- Conduct spawning surveys to determine core spawning areas.

Timeframe: Fiscal years 1999 or 2000
Contact: Ken Meyer

Action: Evaluate sites for acclimation pond development in the upper Cowlitz River system in cooperation with WDFW, Tacoma City and Light, and Lewis County PUD.

Conduct feasibility assessment for each site, prioritize sites for develop, and seek funding for site developments.
Timeframe: Fiscal years 1999 or 2000
Contact: Mike Philbin or Ken Meyer

Action: Conduct comprehensive fish barrier assessment. Coordinate with state agencies conducting similar fish barrier assessments on non-Federal lands in the East Fork Lewis system. Prioritize sites for improvement and seek funding for improving high priority sites.
Timeframe: Fiscal year 1999 or 2000
Contact: Dan Shively (360) 891-5108

Action: Update and expand existing Geographic Information System (GIS) Stream Layer and associated databases. Coordinate with state, county, and local governments off-Forest to develop a compatible GIS stream layer and database for the entire East Fork Lewis River system.
Timeframe: Fiscal year 1999 or 2000
Contact: Dan Shively (360) 891-5108

Abernathy Creek (Tier 4); Germany Creek (Tier 5); Mill Creek (Tier 5)

Ecology/Water Quality Program

Phase 1 Actions

Actions: Ecology, Southwest Regional Office, Water Quality Program, (SWRO), has planned the following actions in the Lower Columbia Basin which are applicable Phase 1, tier 3, 4, & 5 activities associated with the Lower Columbia Steelhead Conservation Initiative:

- Provide technical assistance at the local levels of government, e.g., public works, health, and planning departments;
- Work with local conservation districts regarding concentrated animal feeding operations;
- Complaint follow-up and permit compliance associated primarily with:
  stormwater runoff
  soil erosion
  agriculture runoff
  construction sites
  lake management
  unpermitted discharges
- Internal cross program coordination/communication within Ecology, SWRO.

In addition, cities and counties will be contacted regarding adopting and implementing a stormwater management program.
Timeframe: FY 98 and as needed FY 99, FY 2000-20001.
Cross-Reference: ECY-151.
Contact: Dave Howard, (360)690-4796 and for stormwater, Gary Kruger (360)407-0238.

Phase 2 Actions

Actions: Actions similar to those planned for the Tier 1 and 2 watersheds are known additionally to be important to these watersheds. A number of the watersheds are currently water quality impaired and on the CWA Section 303(d) list. At this time, no specific timeframes or actions are planned. Development of a monitoring plan in the Coweeman watershed analysis area, and road surveys and temperature/fish habitat monitoring in the Grays, Elochoman, Abernathy and Germany watersheds are identified Ecology priorities. As Tier 1 and 2 watershed actions are accomplished, work in these areas will be initiated.
Contact: Dave Howard (360) 690-4796; Joanne Schuett-Hames (360) 407-6296.

Department of Fish and Wildlife

Phase 2 Actions

Title: Abernathy Creek Watershed Monitoring
Actions: Conduct baseline habitat status monitoring survey in the Abernathy Creek watersheds. Utilize the TFW monitoring protocols imbedded in the stratified random sampling design developed from the pilot study on Cedar Creek to begin trend assessment of fish habitat condition. Evaluate habitat above the Abernathy Creek smolt trap to begin evaluation of watershed productivity relative to habitat condition. Monitoring would continue on a 5-year interval following this initial survey.
Timeframe: June 1 to November 31, 2003, and at 5-year intervals.
Cross-References: DFW-208, DFW IIIA3.
Contact: Greg Volkhardt (360) 902-2779

Cowlitz and Wahkiakum Conservation Districts

Phase 1 Actions

Title: Displaced Fisher Stream Habitat Surveys (2-year program in Wahkiakum County and 1-year program in Cowlitz Co.)
Description: Through the Displaced Fisher Program in Cowlitz and Wahkiakum Counties emphasis was placed on collecting stream habitat survey data. The data consisted of collecting information pertaining to fish passage issues, physical characteristics of the channel, channel stability, riparian condition, fish habitat unit stratification, large woody debris, and upslope activities leading to stream degradation. The data was entered and is being managed in a MS Access database. The information was used to identify restoration opportunities for which the Fisher program could provide implementation assistance. Through the program stream data was collected for the Grays River (tier 3), Deep River, Jim Crow Creek, Skamokawa Creek (tier 4), and Elochoman River (tier 5) watersheds in Wahkiakum County. In Cowlitz County data was collected for the Germany Creek (tier 5) and Abernathy Creek (tier 4) watersheds. Best management practices implemented through this program include; development of 5 farm conservation plans, 82,618 feet of riparian fencing, 1,221,103 feet of fish bearing water surveyed, placement of 29 large woody debris instream structures (4,000 feet of stream), 180 feet of spawning gravel placement, 1 debris jam removal, 4,500 trees planted in riparian zones and for erosion control, conducted spawner surveys on 53 streams (402,599 feet of stream). Funding for the program was not re-authorized and the field portion of the program ended in December 1997.
Contact: Darin Houpt, (360)425-1880 or (360) 795-8240

Phase 2 Actions

Title: Watershed Planning and Implementation Projects
Description: Cowlitz and Wahkiakum Conservation Districts intend to continue what we feel is a highly successful approach to watershed management at the local level. Prior to the steelhead listing, the districts had prioritized watersheds within the two counties based on available information including WDFW SASSI report, DOE-303(d) list, local knowledge, and, often overlooked, public interest. This priority list was used through the displaced fisher program for stream habitat survey data collection. The priority list and availability of habitat survey is currently directing our efforts toward the Abernathy Creek, Mill Creek, and Germany Creek Watersheds. We also recognize the opportunity to build upon the watershed analysis completed by Weyerhaeuser for the Upper Coweeman by working with the local community in the Lower Coweeman WAU.
Contact: Darin Houpt, (360)425-1880

Title: Stream Habitat Survey and Habitat Restoration
Description: Cowlitz and Wahkiakum Conservation Districts have submitted a proposal to Department of Natural Resources and Department of Fish and Wildlife's Jobs for the Environment program. There are two key elements to our proposal. First, we intend to continue the stream survey work started under the Displaced fisher program and collect stream habitat data for the Mill Creek (tier 5), Ostrander Creek, Coweeman River (tier 3), and Kalama River (tier 1) watersheds. Second we intend to continue implementing best management practices based on the data collected. Emphasis for implementing practices will be placed in watershed that have watershed plans or are in the process of plan development.
Contact: Darin Houpt, (360)425-1880

Skamokawa Creek (Tier 4)

Cowlitz and Wahkiakum Conservation Districts

Phase 1 Actions

Title: Displaced Fisher Stream Habitat Surveys (2-year program in Wahkiakum County and 1-year program in Cowlitz Co.)
Description: Through the Displaced Fisher Program in Cowlitz and Wahkiakum Counties emphasis was placed on collecting stream habitat survey data. The data consisted of collecting information pertaining to fish passage issues, physical characteristics of the channel, channel stability, riparian condition, fish habitat unit stratification, large woody debris, and upslope activities leading to stream degradation. The data was entered and is being managed in a MS Access database. The information was used to identify restoration opportunities for which the Fisher program could provide implementation assistance. Through the program stream data was collected for the Grays River (tier 3), Deep River, Jim Crow Creek, Skamokawa

Creek (tier 4), and Elochoman River (tier 5) watersheds in Wahkiakum County. In Cowlitz County data was collected for the Germany Creek (tier 5) and Abernathy Creek (tier 4) watersheds. Best management practices implemented through this program include; development of 5 farm conservation plans, 82,618 feet of riparian fencing, 1,221,103 feet of fish bearing water surveyed, placement of 29 large woody debris instream structures (4,000 feet of stream), 180 feet of spawning gravel placement, 1 debris jam removal, 4,500 trees planted in riparian zones and for erosion control, conducted spawner surveys on 53 streams (402,599 feet of stream). Funding for the program was not re-authorized and the field portion of the program ended in December 1997.
Contact: Darin Houpt, (360)425-1880 or (360) 795-8240

Tier 5

Elochoman River (Tier 5)

Ecology/EILS Program

Title: Stream temperature monitoring.
Description
Phase 1 Actions: Continuous temperature monitoring during summer low flows near the mouths of the Cowlitz, Kalama, and EF Lewis rivers.
Timeframe: FY98-03.
Phase 2 Actions: Continuous temperature monitoring during summer low flows at the same sites sampled during biodiversity/habitat monitoring (action ECY-202). Monitoring for long-term trends in stream temperature.
Timeframe: FY99 - Wind/Washougal basins; FY00 - Lewis/Kalama basins; FY01 - Toutle/Coweeman/Lower Cowlitz basins. After 3 years, assess whether to repeat this cycle in FY02-05, or complete coverage of LCSC area by sampling Upper Cowlitz basin in FY02 and Grays/Elochoman basins in FY03.
Cross-References: ECY-103, ECY-203.
Contact: Will Kendra (360) 407-6698.

Ecology/Water Quality Program

Phase 1 Actions

Actions: Ecology, Southwest Regional Office, Water Quality Program, (SWRO), has planned the following actions in the Lower Columbia Basin which are applicable Phase 1 tier 3, 4, & 5 activities associated with the Lower Columbia Steelhead Conservation Initiative:

- Provide technical assistance at the local levels of government, e.g., public works, health, and planning departments;

- Work with local conservation districts regarding concentrated animal feeding operations;
- Complaint follow-up and permit compliance associated primarily with:
  - stormwater runoff
  - soil erosion
  - agriculture runoff
  - construction sites
  - lake management
  - unpermitted discharges
- Internal cross program coordination/communication within Ecology, SWRO.

In addition, cities and counties will be contacted regarding adopting and implementing a stormwater management program.
Timeframe: FY 98 and as needed FY 99, FY 2000-20001.
Cross-Reference: ECY-151.
Contact: Dave Howard, (360)690-4796 and for stormwater, Gary Kruger (360)407-0238.

Phase 2 Actions

Actions: Actions similar to those planned for the Tier 1 and 2 watersheds are known additionally to be important to these watersheds. A number of the watersheds are currently water quality impaired and on the CWA Section 303(d) list. At this time, no specific timeframes or actions are planned. Development of a monitoring plan in the Coweeman watershed analysis area, and road surveys and temperature/fish habitat monitoring in the Grays, Elochoman, Abernathy and Germany watersheds are identified Ecology priorities. As Tier 1 and 2 watershed actions are accomplished, work in these areas will be initiated.
Contact: Dave Howard (360) 690-4796; Joanne Schuett-Hames (360) 407-6296.

Cowlitz and Wahkiakum Conservation Districts

Phase 1 Actions

Title: Displaced Fisher Stream Habitat Surveys (2-year program in Wahkiakum County and 1-year program in Cowlitz Co.)
Description: Through the Displaced Fisher Program in Cowlitz and Wahkiakum Counties emphasis was placed on collecting stream habitat survey data. The data consisted of collecting information pertaining to fish passage issues, physical characteristics of the channel, channel stability, riparian condition, fish habitat unit stratification, large woody debris, and upslope activities leading to stream degradation. The data was entered and is being managed in a MS Access database. The information was used to identify restoration opportunities for which the Fisher program could provide implementation assistance. Through the program stream data was collected for the Grays River (tier 3), Deep River, Jim Crow Creek, Skamokawa Creek (tier 4), and Elochoman River (tier 5) watersheds in Wahkiakum County. In

Cowlitz County data was collected for the Germany Creek (tier 5) and Abernathy Creek (tier 4) watersheds. Best management practices implemented through this program include; development of 5 farm conservation plans, 82,618 feet of riparian fencing, 1,221,103 feet of fish bearing water surveyed, placement of 29 large woody debris instream structures (4,000 feet of stream), 180 feet of spawning gravel placement, 1 debris jam removal, 4,500 trees planted in riparian zones and for erosion control, conducted spawner surveys on 53 streams (402,599 feet of stream). Funding for the program was not re-authorized and the field portion of the program ended in December 1997.
Contact: Darin Houpt, (360)425-1880 or (360) 795-8240

All Priority Streams (Tiers 1 –5)

Ecology/EILS Program

Title: Total maximum daily load (TMDL) studies.
Description
Phase 1 Actions: Conduct TMDL studies on impaired waters as required by the federal Clean Water Act. Some of the rivers and streams in all 5 priority tiers are currently listed as impaired for multiple water quality parameters, but especially for high stream temperatures. TMDLs identify specific control measures and implementation plans required to restore beneficial water uses, like salmon spawning and rearing habitat.
Timeframe: TMDL priorities in the LCSC area are scheduled to be set in FY99 and FY02, with studies completed in FY00-01 and FY03-04, respectively.
Phase 2 Actions: Similar to Phase 1, except that Phase 2 would double the resources which are available for conducting TMDL studies such that TMDLs would be developed for all impaired waters in the LCSC area within 15 years.
Timeframe: TMDL priorities in the LCSC area are scheduled to be set in FY99 and FY02, with studies completed in FY00-01 and FY03-04, respectively.
Cross-References: ECY-104, ECY-204.
Contact: Will Kendra (360) 407-6698.

Ecology/Shorelands and Environmental Assistance Program

Phase 1

Title: Stewardship and Regulatory Approaches to Minimize Land Use Impacts
Action: Ecology's SW Regional Office staff will continue to provide ongoing technical assistance to local communities upon their request, or as permits are received, to improve steelhead and salmonid habitat protection using regulatory and non-regulatory stewardship approaches. Efforts will be made, as current staff availability allows, to proactively encouraging local programs and activities that advance salmonid species protection within the priority tier 1- 5 areas, respectively. Ecology administers the Shoreline Management Act (SMA), reviewing local shoreline

permits for development along shorelines, and associated wetlands, of the state. Ecology also reviews and comments on Clean Water Act 404 permits issued by the Corps of Engineers for projects involving fill in wetlands. Ecology uses state 401 water quality certification to ensure that fisheries resources and other beneficial uses are adequately protected. Technical assistance is provided to local governments for writing critical areas ordinances and establishing incentive-based programs such as current use property taxation for landowners that preserve and restore wetlands. Finally, grant-funding support is offered to local governments for the establishment of updated SMA programs and other innovative shoreline and wetlands protection programs.
Timeframe: Ongoing
Cross References: ECY-126 & ECY-127
Contact: Bill Leonard (360) 407-7273

Phase 2

Title: Wetland Habitat Assessment, Implementation, and Voluntary Stewardship

Action: Beginning with Tier 1 and working down to Tier 5, Ecology will conduct basin-wide inventory assessments over a two year period to identify wetlands of highest benefit to steelhead and salmonids for receipt of permanent preservation or restoration. Two full time staff, one technical planner and one GIS CIC, will conduct the assessment work during the first two years. As assessments are completed, staff involvement will turn to implementation and the GIS position will be converted to another technical planner position. Projects that preserve and restore critical and important salmonid-supporting wetlands through landowner and community stewardship will be pursued. Ecology will work as partners with landowners, local government, other agencies, and interested parties to secure highest quality identified lands and restore key impacted wetlands by providing expert technical assistance and pursuing project funding assistance through existing programs such as Conservation Reserve and others. Completing projects in the implementation phase will progress as funding for on-the-ground work can be secured and as willing owner participants come forward. Implementation will focus first on the highest priority basins – Tier 1 & 2 – progressing into subsequent Tiers as opportunities arise.
Timeframe: FY '98-99 -basin assessments, FY 2000 & beyond – do projects.
Cross References: ECY-226, ECY-227, ECY-228
Contact: Richard Gersib (360) 407-7259 & Jane Rubey (360) 407-7258

Title: Enhanced Regulation to Protect Riparian and Wetland Habitat

Action: The addition of one new regulatory staff person will allow for the monitoring of existing projects, permitted under the Shorelines Management Act and 401 Water Quality Certifications, to determine the extent of compliance with permit conditions and the effectiveness of these conditions in protecting salmon habitat. This will allow for improved permit performance in protecting steelhead and other salmonids. Alternatively, this staff position could provide new technical assistance to local governments on managing and enhancing wetland and riparian habitats by offering

information on the effects of and alternatives to diking, bank hardening and other flood control projects, and gravel mining in flood plains.
Timeframe: FY 98-99 – Initiate monitoring of first tiers, FY 2000- continue
Cross Reference: ECY-232
Contact: Tom Mark (360) 407-7285